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The CoEVOLUTION Quarterly

In this issue:

Margaret Mead fighting with **Gregory Bateson**

Jacques Cousteau at NASA

Ursula Le Guin on menopause

Carl Sauer ahead of his time

Wendell Berry fighting with CQ

Joni Mitchell in high school

J.D. Smith with the Hoedads

and Steve Baer, Ron Jones, Dan O'Neill,
David Shetzline, Francisco Varela,
Lawrence Ferlinghetti

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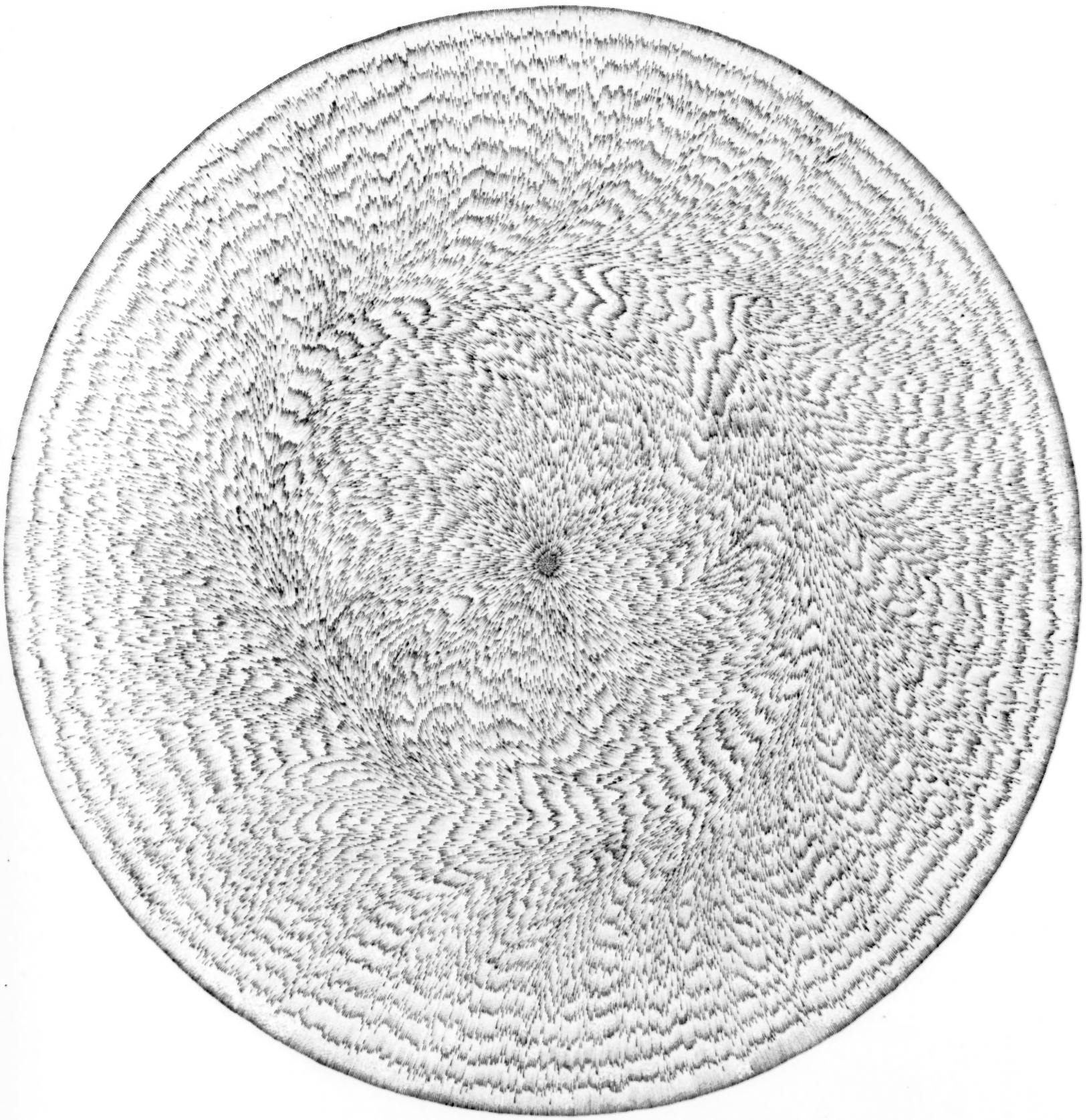

OLBERS' PARADOX

And I heard the learned astronomer
whose name was Heinrich Olbers
speaking to us across the centuries
about how he observed with naked eye
how in the sky there were
some few stars close up
and the further away he looked
the more of them there were
with infinite numbers of clusters of stars
in myriad Milky Ways & myriad nebulae
So that from this we can deduce
that in the infinite distances
there must be a place
there must be a place
where all is light
and that the light from that high place
where all is light
simply hasn't got here yet
which is why we still have night
But when at last that light arrives
when at last it does get here
the part of day we now call Night
will have a white sky
with little black dots in it
little black holes
where once were stars
And then in that symbolic
so poetic place
which will be ours
we'll be our own true shadows
and our own illumination
on a sunset earth

–Lawrence Ferlinghetti

Cover

The cover photos are a small sample of Philip Garner's collection of color pix of culture objects – a culture whose "delicious tackiness" masks considerable psychic undertow. He is the same Philip Garner whose cartoons appear on the inside back cover and scattered through the magazine. Currently he works with Ant Farm in San Francisco building objects like his drawings.

The Robert Horvitz who made the mandala on the facing page is the same one who wrote and illustrated "Some Mice" (p. 100). And the Lawrence Ferlinghetti above is the same pillar of the San Francisco renaissance as he has been since the 1950's. His City Lights Bookstore is polaris in this town.

–SB

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Apocalypse Juggernaut, hello

'Spaceship Earth' comes home to roost

The U.S. Space Program is rapidly headed for moral and ethical problems it may not be equipped to handle.

With the advent of the Space Shuttle in the early 1980's and the ability to construct very large antennas in near-Earth orbit, the resolution of visibility of the Earth from Space will jump several orders of magnitude. The traffic of communications via satellite will do the same. But what's important is, the kind of visibility and communications will change.

I think I'd best tell this story in the order it came to me from Jesco von Puttkamer, the person at the National Aeronautics and Space Administration responsible for long-range planning. I had just completed the interview with Jacques Cousteau and NASA Deputy Administrator George Low which appears on p. 12 when astronaut Rusty Schweickart said he had another appointment for me, with Jesco. The nature of planning at NASA was improving, he said, and Jesco was in the middle of that change.

Sure enough, in quick outline Von Puttkamer showed me how the customary "extrapolative" planning — figuring your future needs from your present and recent capabilities — was being expanded to include "normative" planning — where you envision distant future goals and then work backward to see what is needed to get there.

The problem with normative planning, he explained, is that you need consensus on which distant goals everybody wants. And that's usually impossible to get. So what Jesco did was put down a list of all the interesting distant visions and then see what intermediate steps they all have in common. That's a bright move, because now you can work toward the intermediate projects without having to decide yet about the long-range stuff. Posterity can work that out as it goes, its freedom to choose preserved.

Also you can see your way around some potential blind alleys that extrapolative planning (he also called it "evolutionary") can get you into. NASA administrators had been planning to build Space Tugs following the Shuttle. After a searching look at Jesco's "relevance tree" they agreed that Space Stations — orbiting construction camps — are the real primary need to get to any of the interesting projects, since they all have to be assembled in orbit.

The correct term for that next step, Jesco felt, is "space industrialization."

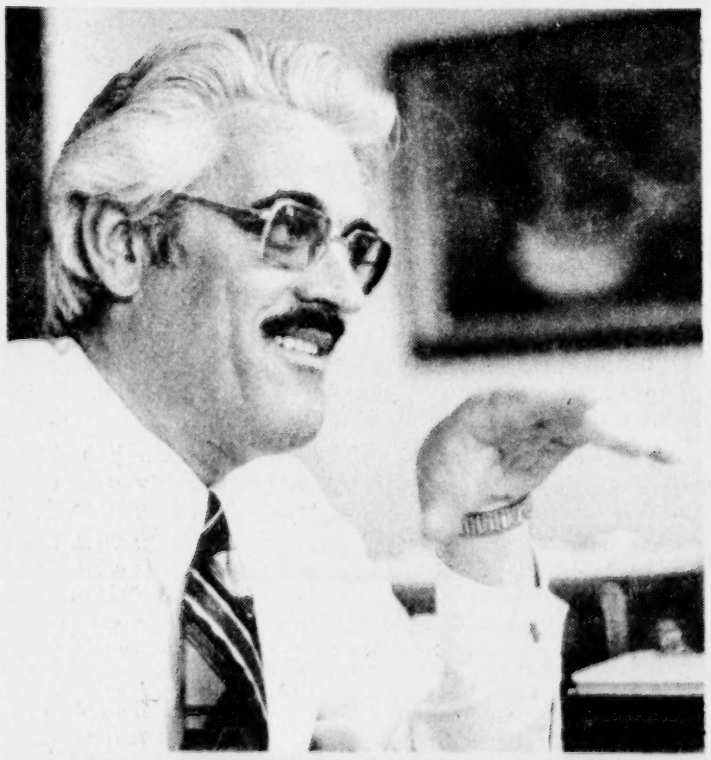
I asked how NASA's long-range planning relates to science fiction. Jesco said that he used to write science fiction to pay his way through school. So did Werner Von Braun. "Arthur Clarke was here just the other day. He drops in maybe twice a year. He gets new ideas from here, and we try out our ideas on him. After all he was the inventor of the communications satellite, the synchronous satellite.

"He was interested in some of the new communication initiatives we have in mind — large antennas from 150 feet up to a mile in length. It turns out that with an antenna of that size — taking all the complicated and expensive machinery and technology and putting it in space only once, and relegating the low-cost terminals to Earth use — you can build person-to-person communication. You end up with something like Dick Tracy wristwatches. Just one 150-foot antenna could have 25,000 channels and could serve millions of people.

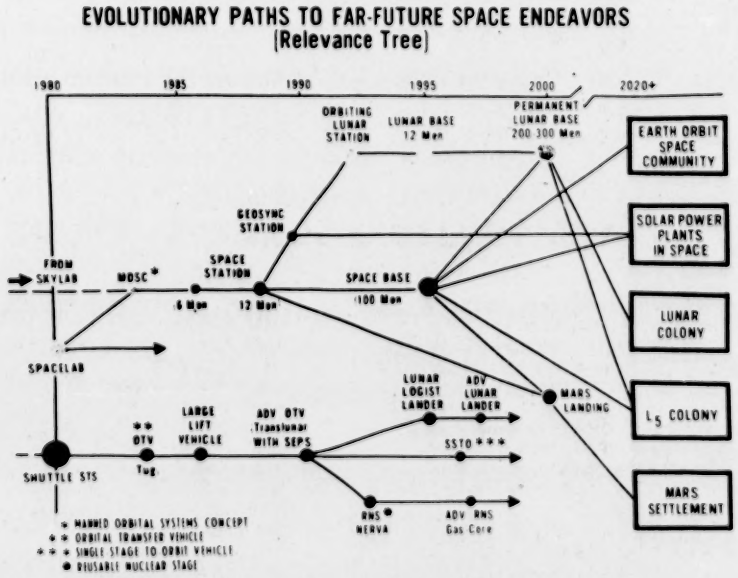
"The same would apply to navigation. If you have a two-mile cross antenna in Space, you can have two wide beams going over the United States regularly. If you are down on the ground with a little wrist band receiver all you need to do is push a button and as the beams come over you, at the intersection the radio shows you exactly where you are. It can even tell you in what direction and how fast you're moving. You can measure your location to an accuracy of 100 feet, and the whole little system doesn't cost more than $10.

"We have even looked at building large structures to illuminate parts of the Earth with light from space. You can get ten times the intensity of the full moon by having maybe 50 mirrors floating out there. You can save electricity on the ground. You can reduce crime in certain areas by making it bright enough. You could facilitate around-the-clock construction. There are even now investigations going on whether crop-growth can be increased by having illumination from Space.

"If you want to find out how many people are getting across a frontier — maybe between the United States and Mexico, or some other country — you can put a million or so low-cost vibration-sensors into the ground. One big satellite receives the output from these sensors, and a central control station can then immediately see whether anyone has been moving around. So you can have better security.



Jesco Von Puttkamer



Von Puttkamer's normative planning working backward from all the possible early 21st century space projects. For any of them a Space Station (construction camp) is needed soon.

NASA illustration of the uses of universal personal communication from visit to visit via satellite. A whole different kind of society is implied.

"Or package location. Using one two-mile cross antenna you can locate packages all across the United States on a central control board. Ten billion packages tracked, each located to 100 feet every hour."

He went on. Vastly improved air traffic control. Sophisticated radar imaging available to every boat near a coast. The complete replacement of the post office by instant hard-copy transmission via satellite. The tagging and tracking of all nuclear fuel, to prevent theft and blackmail.

FUTURE NEEDS REQUIRING LARGE STRUCTURES IN SPACE

BORDER SURVEILLANCE SYSTEM	5000 ft. x 10 ft. ANTENNA
COASTAL PASSIVE RADAR	10 N.MI. CROSSED ANTENNA
ASTRONOMICAL TELESCOPE	800 ft. CROSS
ATMOSPHERIC TEMP. PROFILE SOUNDER	10 ft. DIA. ANTENNA
VOTING/POLLING SYSTEM	150 ft. DIA. ANTENNA
NATIONAL INFORMATION SYSTEM	150 ft. DIA. ANTENNA
PERSONAL COMMUNICATIONS	150 ft. DIA. ANTENNA
NUCLEAR ENERGY PLANT IN SPACE	3600 ft. ANTENNA
ENERGY GENERATION PLANT (RTG)	(TO BE DETERMINED)
ENERGY GENERATION - SOLAR/MICROWAVE	7.3 x 2.6 N.MI.
AIRCRAFT BEAM POWERING	15 ft. DIA. MIRRORS (169 TOTAL)
CITY NIGHT ILLUMINATOR	300 ft. DIA. MIRRORS (100 TOTAL)
NIGHT SEARCHLIGHT - LASER	(TO BE DETERMINED)
VEHICLE SPEED CONTROL	120 ft. DIA. ANTENNA
ELECTRONIC MAIL TRANSMISSION	150 ft. DIA. ANTENNA
URBAN-POLICE WRIST RADIO (2-WAY)	150 ft. DIA. ANTENNA
etc.	

A NASA list of the uses of large near-Earth-orbit antennas.

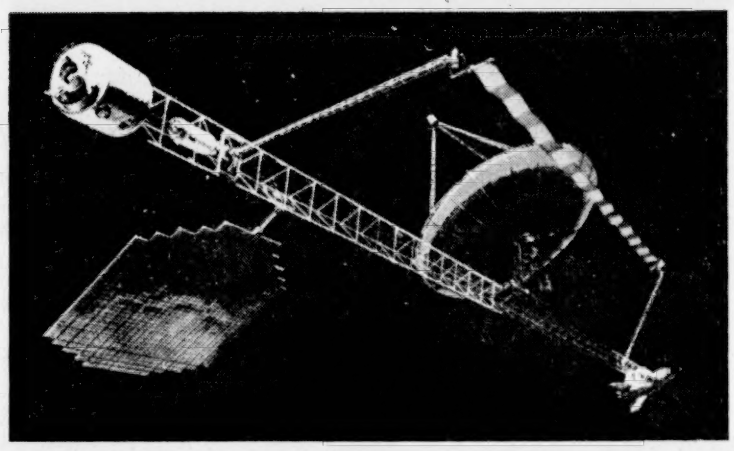
Listening to the lengthening list, I found myself dealing with a case of the horrors. My outlaw nomad was yelling from his hill — no, no fair, too much power to the cops! If there is no place to hide, there is no place to really invent. The Earth one big hydroponic garden? Let me out of here.

I had to flee anyway, to get back to a scheduled lunch with Low, Cousteau, and Schweickart. Over my potato chips and jello I voiced my fears to them. All of that satellite monitoring, I said. With that much information goes too much control. Who is worried about that, who is thinking about limiting it? Who is concerned about protecting privacy or freedom?

Jacques Cousteau said, "If you are doing something that will hurt your neighbor, it should be known. If you have syphilis I think you should wear a sign, 'I have syphilis'."

I said, "I used to smoke marijuana. It was against the law. Are you telling me I should have worn a sign? A lot of inventiveness would have been stopped by that. Too much information, too much control, too much order stops inventiveness. Anything that's newly right starts out by being 'wrong'."

While Schweickart took my side and Low tried to mediate, I privately tried on Cousteau's view. Maybe we do have to become that intimate. God knows the present system I was defending seems hell-bent for disaster. How would it feel



The Space Station. An orbiting construction site using the "strong-back" principle.

knowing everything going on and making new moves only by agreement? Might be a comfort and a wisdom.

The argument was not resolved then. Or yet for me. I continue to admire Cousteau and support NASA. I read with pleasure in **National Fisherman** *that the new 200-mile limit will be policed by satellite — at last better protection for the fish and fairplay on the seas.*

But who polices the policemen? If technology can have normative planning, how about ethical philosophy? We know what's coming. We don't have to wait for the excesses to occur, such as they already have in the trespasses of computer records. Retroactive regulation is harder.

Robots aren't here yet, but Isaac Asimov admirably anticipated them years ago with the now-famous Three Laws of Robotics:

> **1. A robot may not injure a human being, or, through inaction, allow a human being to come to harm.**
> **2. A robot must obey the orders given it by human beings, except where such orders would conflict with the First Law.**
> **3. A robot must protect its own existence, as long as such protection does not conflict with the First or Second Law.**

Wait, robots are here. The damned "smart" bombs of Vietnam violate the First Law. It is time to legislate the devices of war.

The Congressional vote against the SST, the public vote in California about nuclear energy, the agitation about computer records, the self-curtailment of chromosome surgery — effective debate has come to technology to stay. NASA is no exception.

*But I'm not sure exactly what it is must be preserved from NASA, and what are the specific threats. Marshall McLuhan observed, "Since Sputnik there is no Nature. Nature is an item contained in a man-made environment of satellites and information," (***Culture is Our Business***, 1970). And, as reader Ferguson Johnson reminded us, William Burroughs wrote in 1959 (***Naked Lunch***), "Americans have a special horror of giving up control, of letting things happen in their own way without interference. They would like to jump down into their stomachs and digest the food and shovel the shit out."*

Wild freedom, trees falling in the wilderness unheard, the unimpeded health of ecosystems — that's our banner. But I wonder if it's already long gone, like the Earth-centered solar system or the seven days of creation.

Maybe the image of wild freedom is true even if the fact no longer is, and wisdom can still be based upon it.

Nighttime illumination of crops from Space? Filter-proof policing of borders?

I thought at the end of our last issue on Space Colonies that our involvement in debate about NASA was over for a while. It's just begun. Address your comments to **CQ**, *Box 428, Sausalito, CA 94965.*

—SB

New astronaut hiring

This July NASA will request applications for the next generation of astronauts. Thirty will be hired, fifteen being pilot astronauts, and fifteen mission specialists. According to David Garrett the requirements are still being set, but at present they include:

"U.S. citizenship, good health. Pilot applicants must have 1000 hours of first-pilot jet time. We're particularly interested in qualified female and minority candidates. An age limit is illegal now, but probably we'll be looking at people 35 years of age and under. Qualifications for the mission specialists: a bachelor's degree and experience in one or more of the following fields — engineering, biological sciences, physical science, and medicine. Screening, evaluation, and physical examination of applicants will take place in 1977, with the selection of candidates late in 1977. Then we will assign the candidates to Johnson Space Center in Houston in 1978 for a two-year evaluation period. The astronauts will be selected from among the candidates in 1980."

For details write David Garrett, Code M-N, NASA Headquarters, Washington DC 20546.

Space Colony postscripts

Dear Stewart,

Your Spring CQ has stirred up my feelings and random bits of information about space colonization. Thus I am inspired to write a letter when I should be packing for the summer.

A few notes on ecosystems, small is beautiful, and environmental ethics: Working on space colonization has given me perspective on many of these things. They have been great antidotes to the industrial mentality of ignoring side effects and the finiteness of our globe, but they fall down when proposed as absolute, universal ethical principles. Small may or may not be beautiful: good is beautiful, and good varies with the situation. Wendell Berry suggests that hydrogen bombs in space would be monstrous "in any context." In the Universe at large (yes, our universe, part of natural reality) there are places where all the hydrogen bombs on our planet would be like a candle in a forest fire! (None the less, nuclear explosives are not part of space plans, and appear unnecessary.)

I noticed two strong objections to stepping into space among the letters. The first is that space should not be meddled with, lest man hurt it. The second is that space is such a deadly environment that man cannot live there successfully, and was not meant to be there (if god had intended people to live in space, he would have given them the capacity to build habitats there . . .). Space, or at least our corner of it, is a place of dead rock, vacuum, and radiation. No ecosystems to disturb. No groundwater to pollute. No atmosphere to foul. Very few historic landmarks to deface. The worst we can do is disturb it with life. In its way it is hostile, but I wouldn't care to try a temperate zone winter without shelter either. Someone said that man is the only animal that fouls his own nest. The obvious response is that man is the only animal that is trying to grow up without leaving the nest.

On living in space colonies: what is possible is open space, sunlight, growing things, airy tension structures, and clean air. What is needed is imagination. There is little reason to put machinery or industry inside a colony, however much there may be in the vacuum outside. The only kind that comes to mind is farm equipment. If the mad bomber on page 28 tried anything, he might be disappointed. The result would be some broken panels, a stiff breeze a few yards away, and a temporary patch brigade on the scene a few minutes later.

On ecosystems in colonies: try going through everything that has been written on the difficulties of making colony ecosystems work, but replace words with the prefix "eco-" by phrases involving the tending of farms and parks. Two and a half acres per person under ideal farming conditions! If John Todd believes that figure, he must not believe in his own work. The New Alchemy Institute is in many ways taking on a bigger problem than the one we face. Growing

Pictured here, left to right: 1) Pregnant Saanen dairy goat; 2) Pomegranate bush; 3) Eric Drexler; 4) White crested black polish rooster; 5) Elephant garlic, marjoram; 6) Scrap iron to be recycled. This was taken at the L-5 Society commune in Tucson, AZ.

fish and algae in the same tank is much like letting the cows in the corn and not pulling weeds; good stuff but all we need is something close to conventional farming.

About phosphorus: yes, the moon contains phosphorus, as do the asteroids. The reason the Earth is in phosphorus trouble is the same reason that goiters were common in the midwest and that much Wyoming rangeland didn't produce until it was scattered with selenium beads. That reason is that we don't have a closed ecosystem on Earth. Unlike the colonies, minerals on Earth end up in the seas; human phosphate supplies dissappear into our 400,000,000 tons of seawater per person, to be recovered through (largely) haphazard, non-ecologically controlled geological processes. Why do animals risk death to reach salt licks? Gaia's blood tends to pool in her feet, but then she is rather old . . .

Radiation (and two-headed calves): a couple of meters of dirt under foot will do the same thing for a colony as the air over our heads, and for the same reason.

To John Holt: I have worked on a dream for six years. I have done most of the calculations and considered most of the design points you mention. I know the people you are calling mad scientists. All I can say in response to your letter is please respect our ability to see the obvious, and please use a trace of common sense and creativity on a problem before proclaiming it serious. The most interesting questions are becoming economic, and are not simple. If you (or anyone else by the way) wish to visit our group at MIT to discuss anything, please feel free.

To those who have looked at the night sky and not seen a black wall, blessings. Talk to your friends. Life proceeds, and spreads before the Sun. Cambridge is turning towards our planet's dawn line, and I must pack.

Eric Drexler
Cambridge, Massachusetts

. . . For me, Life's purpose is to become increasingly aware of itself and to evolve into increasingly hostile environments (sea→land→air→space). . . .

Roger C. Girouard
Tallahassee, Florida

. . . Imagine the artistic and intellectual implications of living in an architectural space where "down" can be seen to be in three different directions at once! . . .

Thomas S. Cooper
Albany, New York

. . . What rules, regulations, and obligations will the colonists have? Will there be birth quotas? Sex quotas? Loyalty oaths? What about crime? Will there be space penal colonies? Will behavior modification find fertile soil? Will the new environment favor major genetic alteration in the laboratory of humans for particular purposes? Who would decide, and how? What new genetic selection process will the natural environment create? If new human species are created or evolve, will there be higher and lower castes? (Incidental image: genetic modification of the horse + low gravity = Pegasus) Will the environment of a space colony favor certain forms of government? Religion? Aesthetics? Ethics? Will the colonies form a federation of some kind, with common interests, or will they maintain independence from each other and/or earth? Who will regulate mining on the moon? How much of the moon will be mined before it becomes aesthetically intolerable? Will the dust of mining, and the exhaust of rockets create a visible lunar atmosphere? What would a lunar atmosphere do to plans for far-side telescopes? (Would a lunar sunset be beautiful?) What would frequent launches from earth do to our atmosphere? (Skylab tore a temporary 500 mile wide hole at a certain height in the upper atmosphere). Who will have the authority to claim particular asteroids, and why? Considering shape and materials, how will it sound inside a colony? Will the vibration of machinery be transmitted to the interior? Will the interior be echo-prone like mountain valleys? Will there be accoustically dead and live areas? Could these be used to benefit certain activities? Will the superstructure creak and groan from various stresses? Will there be large air blowers? Lawn mowers? (I've heard of a new strain of grass that grows to only 2 - 3 inches). Will noisy activities be banned? Will people seek electrode happiness? Will there be a zero-G postscript to the Kama Sutra? Will cyborgs be created to monitor and maintain colony functions? Will paranormal abilities increase in space? How will the first person born in space feel as s/he matures? What attitude will there be towards death? Will cremation using focused parabolic mirrors be the favored practice? Will bodies be ceremonially sent on trajectories toward the sun? Given the cold of space (in shadow) will cryogenic suspension of terminally ill patients be a common practice for those who look forward to medical advancement and future healthy revival? What if a significant extension of life span is achieved? What would that do to all the flow-charts and graphs concerning population trends, colony construction, and resource use? . . .

Jon Alexander
Point Pleasant, Pennsylvania

. . . The industries most likely to be used — metallurgy, electronics, etc. — are high capital, high technology, they don't employ many people. So why build a large expense colony? Cheaper to rotate your work crew every 3 - 6 months. That's what they do down here in places like Antartica. Nobody I know has proposed a self-contained colony there. . . .

B. Gold
Hope, British Columbia, Canada

. . . As to cities in space — I recant. Earlier on, I sent you a note stating my enthusiasm for O'Neill's space colonies. Since then I've read just about everything on the subject, and have been on O'Neill's newsletter list. I no longer think they are such a great idea. . . . I feel that the colonies will come out looking like the image in Slater's **Earthwalk** — the equivalent of ". . . farting Annie Laurie through a keyhole." . . .

Bud Spurgeon
Austin, Texas

. . . On a space colony we can start nice and clean and fresh and engineer it right. How nice to "build in" recycling from the start, and not have room to accumulate crappy consumer junk. How nice to emphasize elegance and esthetics and bring about a resurgence in craftsmanship, personal creativity, fulfillment, and a true change in consciousness. I almost hate to point out that me and most of my neighbors are doing our damndest to live like that right now on this planet, and succeeding pretty well. Doesn't cost the taxpayers 100 billion either. . . .

Gerald E. Myers
Briceland, CA

WENDELL BERRY ANGRY

April 27, 1976

Dear Stewart,

Your promotion of the space colony idea is getting more and more irresponsible. Like O'Neill and Vajk, you begin with an air of critical reasonableness, and promptly resort to the glib logic of a salesman. None of you has yet foreseen a problem without at the same time foreseeing a more than adequate answer; indeed, as you represent it, a space colony will be nothing less than a magic machine that will automatically transmute little problems into big solutions. Like utopians before, you envision a clean break with all human precedent: history, heredity, character. Thanks to a grandiose technological scheme, nothing is going to happen from now on that is not going to improve everything; as you say, even if it fails, we will be much better off. You people are operating at about the cultural depth of an oil company public relations expert. All this prophetic-ethical computer-mysticism! What is wrong with it is that it is simply failing to make sense — unless, of course, one is looking at it as a sycophant of science, or from the point of view of a government agency or a corporation. That is exactly what worries me: that your coverage of this issue, whatever you mean it to do, will serve to recruit and train a company of intellectual yahoos to justify the next power-grab by the corporations and the government.

Your dismissal, out of hand, of so many people's objections and doubts — solicited by you — is an alarming display of smugness. It is also insulting. I thought I was being asked to take part in a debate on an issue that you felt to be debatable. I now sense, from the substance and tone of your various remarks in the spring issue, that I was asked to say something that you expected to be inconsiderable in support of what you had already determined would be the losing side.

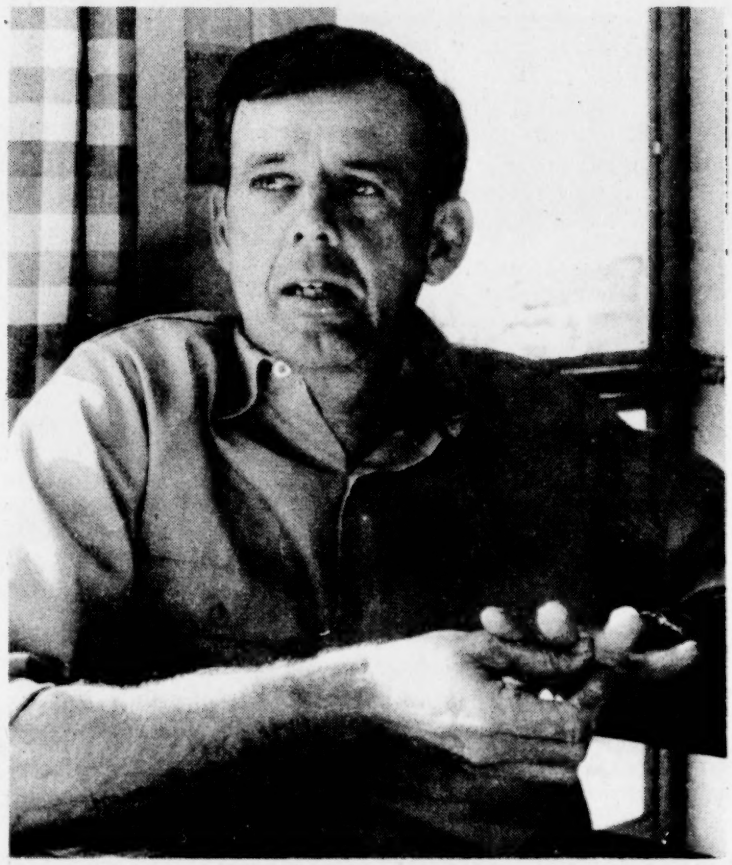
As you might have expected, I hold this treatment in something less than esteem. Perhaps, I have said to myself, I should just leave my statement in the spring issue as my final words to **The CoEvolution Quarterly**, and say no more. The trouble is that those were not meant as parting words, and I think parting words should be offered and understood as such. Here, then, are some parting words. First, some objections to various statements in your editorial:

1. "Either knowledge," you say, meaning either the success or the failure of space colonization, "is a kind of growing up." This assumes that all knowledge is good — which, of course, is not true. It is especially not true of knowledge that depends on practical proof or demonstration. Most people, one hopes, would not consider themselves improved by having killed someone, though, having done so, they would know more about it than before. There is no culture I know of that has not held that good people must refuse to know some things.

2. "If we can learn to successfully manage large complex ecosystems in the Space Colonies, that sophistication could help reverse our destructive practices on Earth." Sophistication, like knowledge, is a subject power, is good or bad according to the use that is made of it. Generally speaking,

"Wendell Berry is the Sergeant York charging unnatural odds across our no-man's-land of ecology" wrote Ken Kesey in his review of Berry's book of essays **Long-Legged House** *(CATALOG, p. 48). Wendell is a prodigious novelist, poet, college teacher, and Kentucky farmer besides. Here he is responding to the 76 pages of comment on O'Neill's Space Colonies in the previous* **CQ** *(Spring '76).*

—SB



James Baker Hall

Wendell Berry

the more technological sophistication we have attained, the more destructive we have become. I do not think you recognize any of the doubts that now must surround the argument that still more of such sophistication will make us less destructive. It is not sophistication that makes people behave responsibly, but generous purpose and moral restraint. Peasants in Japan 4,000 years ago had these competences of character — and had a technology appropriate to them. This was a kind of sophistication, I think, though very different from the kind you are talking about. It was not inherent in their technical expertise, but in their willingness to live within strict moral-ecological limits. They did not waste anything. There have been other cultures that have had something of this sophistication. Some people in our own culture have something of it now. If such undestructiveness is so clearly possible on earth, by what logic shall we look for it in outer space? How can we expect to discover it by extravagance when its first principle is thrift?

3. You say that what the space colonists consume or destroy outside Earth's atmosphere will be "taken from no one else. They are out of the Earthly 'zero sum game' where one group's gain is another's loss." But do we not live in a universe? Is there no ecology of the heavens? You sound like Columbus taking "possession" of the Indies. I think you are only serving up again in space-jargon the ancient fallacy that we are somehow licensed to misbehave when we are away from home..

4. "The experiment of space colonies endangers only the experimenters." Not so. This continues your deliberate evasion of the fact that this project calls for more government and more government spending. Who do you think is going to pay the bill? And do you think people become more free by having their taxes increased? And what is the military potential of a space colony?

5. "People want to go not because it may be nicer than what they have on Earth but because it will be harder." This is essentially a warmed-over Marine Corps recruitment advertisement — the same irresponsible promise, appealing to the same sad fantasy: "If I could just get out of this nowhere place,

I could be a real man. I could show 'em." Let me point out to you, Stewart, that we have not yet, in this country, faced the hardship of the earth. As a people we lack the disciplines either of character or method to live here without destruction. If some of your would-be space recruits want to be sure-enough heroes, let them encapsulate themselves on a strip mine bench and try to make it fit for life by 1990. Let them "extend the biosphere" to the man-made deserts.

6. Space colonization, you say "employs the same nations, the same engineers, manufacturers, contractors, etc." as the arms race. Exactly. And this makes it certain that the worst characteristics of this society will survive in space colonization. The assumption I am arguing from is that you cannot escape character; you can only change it by changing its understanding of its limits. The arms race mentality is exactly the sort that would most like to re-enfranchise itself by opening "infinite" sources of energy and materials in space. That supposed infinity will be a perfect greenhouse for bad character; look at what mere abundance has already produced. Good character requires the disciplines of finitude.

7. "The Arms Race is a big bore." I have no understanding at all of your willingness to be responsible for this statement. Is space colonization, then, to be a kind of governmental entertainment for those who are bored with war? "To us," said D. H. Lawrence, "heaven switches on daylight, or turns on the showerbath. We little gods are gods of the machine only. It is our highest. Our cosmos is a great engine. And we die of ennui. A subtle dragon stings us in the midst of plenty."

8. "I guess I expect that there will be much more public participation in Space Colonies than there has been in the Space Program so far. Debate such as in this issue." Why has there not been more public participation so far? What reason is there to expect an increase? And what is the force of public debate in the face of the economic and political power of the engineers, manufacturers, and contractors you were talking about? As you may remember, we carried on a protracted debate with those people during the Vietnam War. They stopped somewhat short of having us over for supper.

9. "Now is the time for NASA to encourage people besides engineers to get into the act. The program needs administrators who are not afraid of excellent artists . . ." The fundamental totalitarian impulse is to officialize excellence. We already have far too little free science because most scientists are busy "applying" science for the corporations or the government, which are therefore not afraid of excellent scientists. Almost any conservation fight will reveal very quickly whose hand most of the excellent scientists are eating out of. Now you would like to see excellent artists applying art for NASA. I hope the excellent artists will have the decency to remain a little hungry. Excellence in art, and in science too, requires enough independence so that one can afford to tell the truth. Economic dependence makes excellence servile. The government's prophet is always a liar.

I think you have wandered into a trap — one that is crowded with so many glamorous captives that you think it is some kind of escape. The trap is that a technological "solution" on the scale of this one is bound to create a whole set of new problems, ramifying ahead of foresight. Here is a pertinent quote from Mr. Vajk, whose essay you offer with evident approval:

"The popular wisdom currently holds that purely technological fixes are 'bad' because each technological 'solution' creates five new and different problems. But the reverse side of the coin is surely just as valid: purely societal fixes are also 'bad' because each societal 'solution' creates five new and different problems!

"What it is important to recognize here is that it is not relevant whether a 'fix' is societal or technological; what matters is whether or not the consequences of any proposed program have been carefully thought out, and that steps be taken to forestall or minimize any adverse effects on the system and its parts."

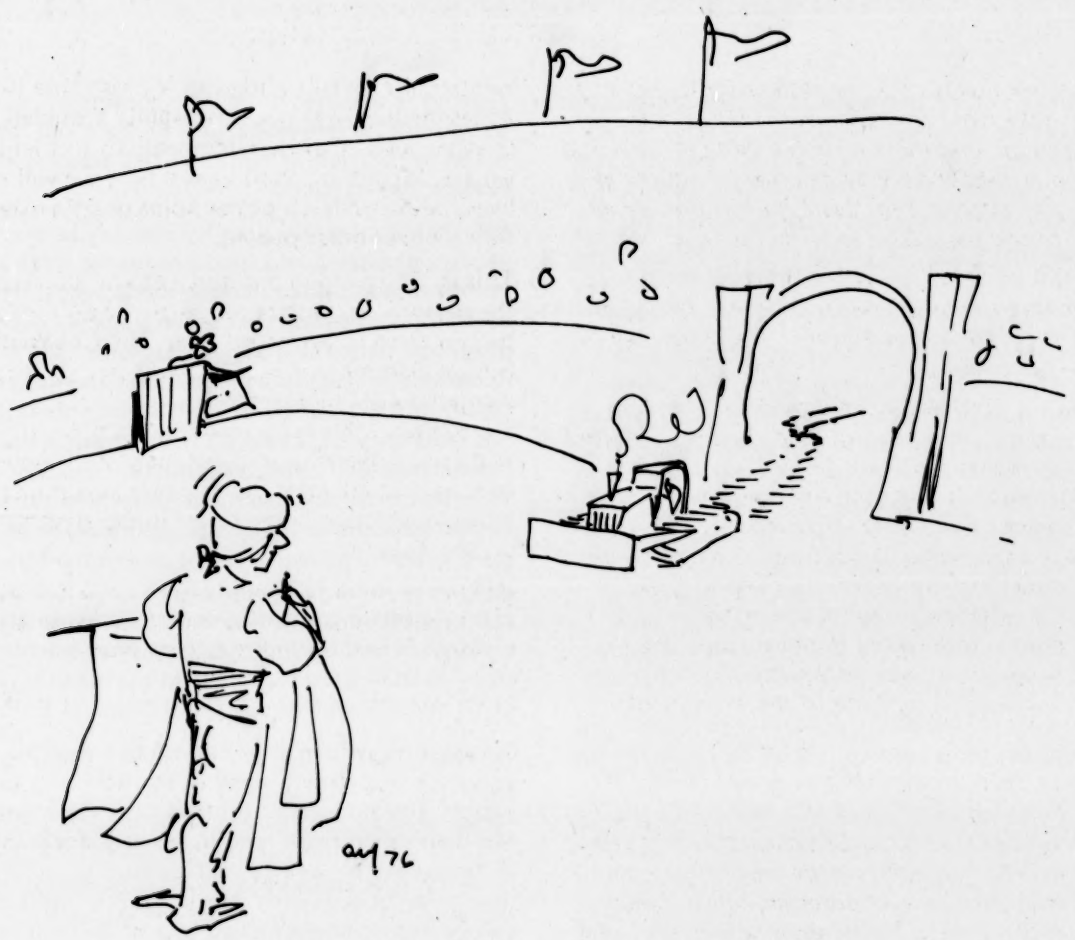
Mr. Vajk apparently does not recognize that he is talking about a condemnation peculiar to his kind of "scientific" mind. It is a condemnation in two ways: (1) It would commit us to a policy of technological "progress" as a perpetual bargaining against "adverse effects." (2) It would make us perpetually dependent on the "scientific" foretelling and control of such effects — something that never has worked adequately, and that there is no good reason to believe ever will work adequately. The fact is that when you overthrow the healthful balance of the relationships within a system — biological, political, or otherwise — you start a ramifying sequence of problems (Mr. Vajk's "five" is a figure of speech) that is not subject to prediction, and that can be controlled only by the restoration of balance. If we elect to live by such disruptions then we must resign ourselves to a life of desperate (and risky) solutions: the alternation of crisis and "breakthrough" described by E. F. Schumacher.

To say that we can only choose between purely technological solutions and purely societal solutions is a gross oversimplification, and probably a gross deception as well. To begin with, the distinction itself is counterfeit: it is impossible to differentiate between a society and its technology; there is a mutuality of causation and influence that I do not believe can be convincingly picked apart. All that can be served by this distinction is the self-esteem of a specialist who, for moral convenience, wishes to ignore the social consequences of mechanical "solutions."

Solutions that are only technological or only social or only both are necessarily accompanied by adverse effects because even both together fail to provide an adequate context or standard of behavior. Mr. Vajk's false distinction between technology and society rests upon another, implicit distinction that is equally false: he supposes that the human considerations of technology and society can somehow be separated from all of creation that is not human: plants, animals, soils, waters, climates, regions, continents, the world, the universe. The universe of systems within systems survives because it is healthy, it is in balance. Humans survive within it because — only because — they are, so far, more healthy than not. When the whole is considered, then it becomes possible to conceive of solutions of which the standard is not technological and/or social (wealth, power, comfort) but ecological or organic (health). When health or wholeness (not cure) is the standard, then solutions do not create problems.

I doubt that either of those terms (ecological or organic) is definitive; I use them for want of a better term. I can better define what I mean by an example: The flush toilet is a social-technological solution to a problem: How to get rid of excrement inoffensively. This solution immediately creates two problems (soil depletion and water pollution) which call for solutions (agricultural chemicals and sewage treatment plants) which create many other problems which call for more solutions which create even more problems, and so on and on. I doubt seriously that Mr. Vajk, if he had the national budget at his disposal, could accurately trace out and forestall or minimize the adverse effects of the flush toilet, much less those of space colonization.

By contrast, we have here on our farm an outdoor toilet with a concrete-block chamber underneath, in which, by the addition of sawdust and some effort and care, we compost the excrement of our household and make it fit to return to the soil. We do not do this, the Lord knows, because we want to be wealthy, powerful, and comfortable, but because we want to be healthy, and we know that we cannot be healthy if our soil is unhealthy. It is an ecological or organic



G. Russ Youngreen

solution. It was not prescribed to us by technology or society, but by a need more comprehensive than both. It is less dependent upon a device than upon an understanding and a discipline. And it does not cause a ramifying series of problems – or of problems and solutions madly leapfrogging over the top of each other. It is a solution that causes a ramifying series of solutions. It withholds contaminants from the water, it enriches the ground, it calls for forethought, moral responsibility, physical exertion – and from those solutions other solutions follow. It begins a process of healing, and healing does not cause a problem; it only incidentally causes a "cure." Healing can properly end only when we are whole, when health joins us to the universe. The whole is a great concordance of solutions.

Such solutions, I think, come from the understanding and acceptance of limits. I do not think they can come from dependence on any kind of quantity to which there is "no perceptible or theoretical end."

But that is enough of picking at details. Let me see if I can give you a more concise statement of my objection. It is this: your thinking (and that of O'Neill, Vajk and Co.) on this matter is demonstrably superficial, and its superficiality slides over a political alignment that I find both morally repugnant and personally threatening. The fact is that you cannot advocate space colonization without implicitly advocating an enlargement of governmental power and the enlargement and enrichment of the corporations. As you are bound to be aware, this project will not be carried out in place of or at the expense of any other government project. It will be added to a budget that is already oppressive. The people will have to pay for it – which is to say that the people of moderate and low income will have to pay for it.

To point the issue more exactly, you are proposing to increase the tax burdens of those of your readers who are struggling to implement in craft shops, in communes, and on small farms ideas and hopes that you have supported. These are marginal enterprises, already threatened with being taxed and priced out of existence. In practical terms, your advocacy of space colonization amounts to a betrayal of these modest settlements of the earth. That is why I intend these to be parting words.

That, and disappointment. Since 1968 I have followed what you did with what, to me, has been a satisfying interest and friendliness – not to mention a steadily growing sense of indebtedness and gratitude. But now you have set yourself up as what I can only look on as a political enemy – not because we do not agree, but because you have now made it plain that you are willing to coerce my support of an undertaking with which I disagree: though you offer me room in your magazine to object, you are nevertheless willing to turn my tax money and my citizenship against me. I cannot be tolerant of that. I am not going to associate myself or my work with coercion.

Wendell

P.S. I shall consider this an open letter. You can publish it or not, as you wish. But I intend to send copies to interested persons. And I will probably publish it in some form – whole or in part – somewhere, sooner or later.

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1 May, 1976

Dear Wendell,

You know of the admiration and affection I have for you. That is not diminished by your remarks about Space Colonies, but increased. Of all the 76 pages on the subject in the Spring '76 CQ *the statement I most often quote is your, "Humans are destructive in proportion to their supposition of abundance; if they are faced with an infinite abundance, then they will become infinitely destructive." I said it last week to the Deputy Administrator of NASA along with other misgivings having to do with satellite surveillance that I've expressed in this issue.*

I'm no astronaut, Wendell, I'm an editor. My function is to raise questions, and shortly after I lucked onto the subject of Space Colonies I realized that they raise a tangle of questions so fundamental as to leave no one uncleaved. They raise doubts, enthusiasms, and passions the like of which I have not seen since I gave $20,000 to an audience of 1500 people to argue over.

Irresponsible? I did not put money or Space technology into this world. They push us around to the exact degree that we

ignore them (rise above them). For me responsibility requires that we wade in and see what we really want. Governor Brown has convinced me that there is such a thing as "political truth" and that it is arrived at only by a sustained (trusting) personal dialectic until everyone involved realizes they share a common humanity and participation with life, in whose perspective lives resolution.

I cannot anticipate that resolution, Wendell, ever. Evolution (especially co-evolution) defies prediction. Or control. Or even categorical understanding.

Recently I heard Space Colonies scolded by Elise Boulding as a typical male project. My notion of responsibility required that I mention to her Margaret Mead's 25-year support of Space Colonies, my mother's early and undiminished enthusiasm, and someone you know who probably had more influence on me than any one on this subject. That was Lois Jennings, Ottawa Indian and my wife for six years. When we were courting in the Nation's Capitol she expressed disappointment over one of the early Vanguard satellite misfirings. "I didn't know you were interested in that," I said. What she replied was, "Every one of those shots gets us closer to home."

Home to the tribe? To Washington, D.C.? To a certain star, or the stars? She never said.

To reply to your main concern (Gary Snyder shares it; so do I, less fervently): as near as I can tell, a large centralized government has been sufficient for a Space program, but it is not necessary. The next big project, Spacelab, is being designed and constructed wholly outside the U.S. by a consortium of European nations. Would you favor a world of proliferating smaller governments and occasional major collaborative enterprises such as ocean farming and space exploration? I would.

I think that nuclear energy can be stopped, Wendell, and should be. I don't think Space exploration can be stopped, but it might be made wiser. I may be wrong about that. I agree with you that a society can loot or it can learn, but not both. I would like to see us learn in Space, as well as here. If we find they're mutually exclusive, then preferably here. Let us carefully watch the incremental steps into Space. It is a new natural history, and natural history, says Bateson, is the correction for piety — including yours, mine and NASA's.

I believe that **The CoEvolution Quarterly** *is useful to the extent that it is impious and acutely observing and a forum. That's why I value your voice in the magazine. Please don't withdraw it.*

I value you, in any case.

Stewart

P.S. For what it's worth, the mail and personal communication indicate that the Spring **CQ** *raised far more misgivings than faiths among the readership about Space Colonies. (I'm glad about that.) Don't quit while you're ahead. Besides, we've other fish to fry.*

May 8, 1976

Dear Stewart,

I have felt your friendship, and valued it, and returned it. For me, that greatly increases the burden of this argument. I fear, as I fear nothing else, these great projects — all of them — with their accompanying shifts of continental blocks of wealth and their millions of little coercions and oppressions. (It doesn't make any difference who does them; they can't be done without extremely dangerous concentrations of wealth and power.) I have feared them, I think, as long as I have been conscious of them, and in the last ten or twelve years I have spent a lot of energy opposing some of them. The Space Colony proposal, unlike the others, involves a very complicating personal difficulty: it comes wearing the face of a friend. My response to the public issues involved has been constantly troubled by the question of what such an undertaking will do to friendship. For what we are disagreeing about is not how we will run our own lives, but how much power some people may be permitted to have over other people.

This is not an argument that I can enjoy very much, because the personal stakes are too high. I don't want to be unfriendly to you or to be estranged from **The CoEvolution Quarterly**. But I called my previous letter "parting words" because I wanted you to make no mistake about the intensity of my opposition. This is no academic debate. It's not the sort of disagreement that the two sides can resolve in a handshake and "still be friends." I can see it as nothing less than the most audacious scheme so far in the struggle to abolish all small solutions.

But I'm grateful for your letter. I can't overlook its generosity, and I respect your willingness to speak directly to a critic. I therefore venture these further words:

1. I agree that your "function is to raise questions." My complaint is that you have not been raising enough of them, or respecting enough the questions raised by others. I think you have been functioning more as an advocate than as an editor. If you want to be convincing as a question-raiser you will have to quit giving so many one-sided answers.

2. For me, responsibility does not require "that we wade in and see." It requires that we see very clearly before we wade in.

3. To say that "Evolution (especially co-evolution) defies . . . control" is to abandon the whole issue of responsibility. It is to say that anything we can do we must do. I wonder if you really mean this. Again, you have bewildered me.

4. It has never occurred to me that I should be against space colonization only if it can be stopped. I shall be against it even if it can't be stopped.

If **The CoEvolution Quarterly** can be run as a forum for this debate rather than as a mouthpiece for the "winning" side, then this parting can be mended. I hope very much that you and I will have other fish to fry. But it's hard to have an appetite for fish when you've already got a bone stuck in your throat.

Wendell

P.S. If you want to reply to this, feel free.

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11 May, 1976

Dear Wendell,

Thanks to your response I do feel free. And I invite you to help me inspect the question of freedom and control. I am feeling and thinking and learning increasingly two ways about it as I hear the messages of geographer Carl Sauer and even the most environmentally beneficial activities of NASA. The more we know the more we control. According to Sauer no acre of Earth is unaffected by "the agency of man" — especially the places we have tried to protect. Cultural now and increasingly dominates biological. Recently something has been added to cultural which is the product of intellect — technology in its full range of exquisite to brutal.

Maybe our function is to help maintain the best of biological wisdom and the best of cultural wisdom, and continually sort the exquisite from the brutal technology. The major criterion, I suppose, is balance. Where does freedom enter in all those controlling choices? Maybe through Heinz Von Foerster's guideline — choose the path that leaves the most choices open.

Does that include paths that open new choices — like Space?

Stewart ■

Jacques Cousteau at NASA Headquarters

Stewart Brand: Jacques, I'm interested to know why you're interested in the Space program.

Jacques Cousteau: At the very beginning of the space program, there was among all the ocean specialists a kind of scandalized reaction, saying, "How is it that so much money is going to be spent to explore distant things that have very little to do with our life, while the ocean seems so little known, and needs so much funding?" I don't know why, but at that time I had the vision of what Space would bring to oceanography. Since the beginning, I was convinced that our duty was to explore outer space as much as or more than inner space. The reasons that I had were purely philosophical, and since then they have become very practical. Everything that happens is demonstrating the need for Space technology applied to the ocean. The only thing that worries me is that for the moment there is still no coherent program for systematic monitoring of the ocean from Space.

SB: What would be an ideal monitoring of the ocean from your standpoint?

Cousteau: Well, I think that it cannot be done unilaterally by any nation, but I think it has to be organized, at least between the nations who have space technology, to make it a world-wide survey in order to constantly have the pulse of the ocean. The health of the ocean has to be checked all the time.

SB: What are the indicators of health that you can get from Space?

Jacques Cousteau is not the only environmentalist to have discovered the uses of satellite monitoring of habitat, but his subject, the oceans, simply overwhelms any other method of measurement. As a result there is a growing alliance between Cousteau and NASA. In charge of that liaison is Astronaut Russell Schweickart, who also set up this interview, which took place in the office of NASA's No. 2 man, Deputy Administrator George Low. Low, who has been with NASA since the beginning, is about to leave to become president of Rensallear Polytechnic Institute. Also on hand for the interview was Cousteau's son Philippe, who remarked after the tape ended that the American naval commanders in the Revolutionary War always had the crew break up the lifeboats before a battle.

Cousteau's comments read mostly easily if you mentally restore their sexy French accent. He is a pwerful Gallic presence as well as a mythic hero (Odysseus, Captain Nemo). You may want to join the Cousteau Society at 777 Third Ave., New York, NY 10017 or 8150 Beverly Blvd. Los Angeles, CA 90048. $20/year.

—SB

Cousteau: Well, you can not have an indicator of health without having a thorough knowledge of the ocean, same as we can not predict the wind if we do not have a full knowledge of the atmosphere. So, to my opinion, a complete monitoring of the ocean involves two different techniques — remote sensing and tele-measurements made by interrogating sensors that are deeply anchored in the ocean. It's two different techniques, but both pass through a satellite.

SB: How rich would the data have to be for it to be useful?

Cousteau: This is a gigantic program. It's a gigantic program that at least has to be started one way or another, you just can't go full scale on a program like this, because it will cost probably billions of dollars. But it has to at least be experimented in all these phases systematically before a vast program is launched. Seasat was not a systematic oceanographic satellite.

SB: Well, has anything come out of the space program so far that has been useful in ocean monitoring?

Cousteau: Oh, yes. Lots of things. Bits and pieces.

SB: Like what?

Cousteau: Well, our knowledge of swell, currents, temperature differences. Day to day there are quick changes in currents, for example, that information could be forwarded to ships.

George Low: Jeek, you had some ideas about looking for sea farms from Skylab. Did anything come out of that?

Cousteau: For the moment, not much that I have heard about.

Russell Schweickart: That's an interesting little thing. During the joint mission with the Russians, the ASTP mission, Jeek and I were down in Houston, I was showing him the Control Center, the tremendous accumulation of nerve endings there in Houston, and the way in which the mission is controlled. We went back through some of the support rooms, and as we got to one of the rooms which was assisting in what we call the visual observations program — which was the astronauts and cosmonauts looking at particular Earth features to gain information and to take photographs — Jeek went up to this big world map and immediately started circling about six or eight different areas of the world which are sort of bays, as I recall . . .

Cousteau: Areas which seemed to me to be favorable for mariculture. But of course they have to be checked very carefully.

Low: How do you define mariculture? What are you looking for?

Cousteau: Well, as we were discussing yesterday, in exploiting the Earth agriculture was the break through. Before, it was nomadic collecting, and when the first settlers began to plow the earth, they did this only because they had

Brand

George Low, Deputy Administrator of NASA, flanked by Astronaut Russell Schweickart and Commander Cousteau.

had ancestral knowledge and observation from thousands of years of father-to-son transmission of understanding of all the plants and the animals in the forest, and they had selected a number of things like wheat, like rice, like corn, a very few, that were favorable for culture. And also they selected among all the animals those that were favorable for livestock because they were directly transforming vegetables into protein. They did not choose the eagle, the falcon, the tiger, et cetera; they chose the cow, and so on. This was a formidable knowledge of nature that was accumulated for thousands and thousands of years, probably hundreds of thousands of years.

Now, we suddenly understand that in the sea we are not doing that at all. Fishing is hunting. Scientific fishing is scientific hunting. When we see those big factory ships we can compare them with the people who shoot wolves from an airplane or from a helicopter. It's high technology in the service of just hunting. It means raping the sea for what it has. That's all it is in fishing. So fishing must be eliminated completely and replaced by farming, if we are to be civilized in the sea as we are on land. What we call civilization originated in farming. We are still barbarians in the sea. When we are farmers we are all going to get many times the yield per acre that we are getting now, because we are skimming the production of the ocean at the top level, which means at the level of the eagle. The tuna is the eagle of the sea. The marlin is the tiger of the sea. But none of these is eating directly vegetables. For 1 pound of cow meat, we need about 10 pounds of grass. For 1 pound of tuna you need 10,000 pounds of grass or vegetables.

SB: We have an article in this issue of the magazine that is espousing krill as a good source for human food.

Cousteau: Well, that's a very shameless substitute for the whale. The whale was a very good way to exploit the sea, if we had kept it at the maximum yield. The maximum yield is something like 70 - 75,000 whales. Now the yield is 32,000 a year. A few years ago we were killing several hundred thousand. If we had kept the number of whales at the maximum yield, we would be exploiting the krill in the best possible way for mankind, because this is one of the most favorable chains that there is in the ocean. The krills are eating directly phyto-plankton, and 1 pound krill needs only 10 pounds of phyto-plankton. The whales are eating the krill directly, and there the transformation factor is fantastic. You need 4 pounds of krill to make 1 pound of whale. Which means that you have a 40-to-1 ratio instead of the 10,000-to-1 for the tuna. And besides, the krill is not so easy to digest for mankind. It's very good for whales, not so good for man. So, if you are just speaking of efficiency, the whale was the best transformer there was. The ratio was offering us a beautiful way to exploit the krill, and we've slaughtered them, eliminated the beautiful way.* But you know, in any case I don't approve of using whales for food.

SB: Would it be possible to restore the whale to that function?

Cousteau: Yes. In 2027 there is a chance that there will be whales again. If we start now.

SB: What's good maricultural land? I mean . . .

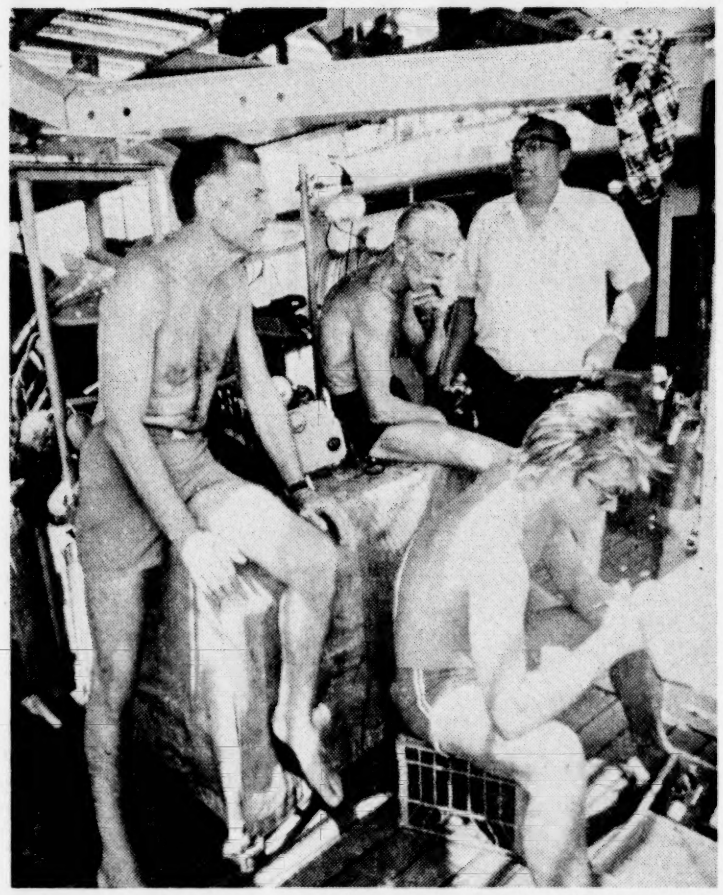
Cousteau: You have good lands and bad lands in the sea. You have all the places where there is upwelling currents bringing in the nutrients from bottom – good lands. You have also the places that are not enriched.

Low: Can Space help you find the good ones and the bad ones?

Cousteau: Oh yes, because the upwelling currents are automatically near the surface, enriched in phyto-plankton, which means that by luminescence, by chlorophyll detection via satellite you can detect it.

Schweickart: In fact we talked earlier about getting together today with Dave Chalener who is the assistant secretary of the Smithsonian for Science. It happens that he ended up working with the Panamanian government on trying to predict the cold-water upwellings which then start the whole food chain through the indigenous shrimp there, and which are presently

*Due to opposition by Cousteau and our Peter Warshall, as well as severe page-space limitation, we've dropped the short article on krill. —SB



Aboard Calypso *off Eluthera Island in the Bahamas for the joint NASA/Cousteau Society research on use of the Landsat satellite for shallow sea bathymetry (water depth measurement). Left to right: George Low, Jacques Cousteau, Fabian Polcyon (from Environmental Research Institute of Michigan), and Jack Ford (President's son).*

in serious trouble. They have to preclude shrimping during the critical time when the shrimp first emerge until they reach a certain size. But that is depending on when the up-welling starts, and it's unpredictable, so the government forbids the shrimping at the wrong time.

Cousteau: But you see, here again, you are confusing fishing and mariculture. What the Panamanian government is trying to do with NASA is improve the destruction of the sea — the elimination of the shrimp once and for all.

Schweickart: Nope, let me disagree with you Jeek. I can't allow that to pass, because in fact what the Panamanian government is interested in doing by monitoring the up-welling, is to preclude shrimping during that critical phase when the shrimp are first emerging. Right now they do that on a relatively arbitrary basis, and they miss the right time, and as a result they wipe out the baby shrimp.

Philippe Cousteau: That would be efficient if they had a limit to the amount caught every year. But that is not true. I just came back from that area, and there is no limit to the catch. So really, what you're talking about is an improvement in the amounts that are caught.

Cousteau: Improving the fishing is always bad. It's a dead end. It's like improving hunting with machine guns and toxic gases. I know that administrations such as NASA, and mankind in general, will probably be obliged to make the switch progressively. The switch cannot be made overnight. Scientifically we are not at all in the same position as the primitive man of 12,000 or 15,000 years ago, because we do not have the accumulated knowledge of the behavior of the marine ecosystem that our ancestors had on land. So we are unable today to chose which species is good in what area. Marine culture is for the moment almost a dream that is not about to come true before we increase tremendously our knowledge. That is why fishing is still as a kind of intermediate evil which is necessary. But improving fishing is in the long run a disaster.

SB: Dr. Low, why is Space interested in the Cousteaus?

Low: I spent a very very enlightening week with Commander Cousteau on *Calypso*. It was Christmas a year ago, off a small island in Mexico. We started talking about what we can jointly do — the Space program and the Cousteau Society — in learning how to better understand the oceans and to begin to get on top of some of the problems that Jeek has been discussing here. The one thing that impressed me in those few days more than anything else is the great similarity of how science must be done in the oceans and how science is being done in space. When we went to the Moon we had men who were visible to the world in a hostile dangerous environment. The analog of that is the men under the sea. What our astronauts do on the Moon, or Cousteau's men do under the sea, is well-planned and has a detailed scientific purpose. When we sent astronauts to the Moon they had with them scientific instruments that they left there, or samples that they took, planned and programmed and detailed to get more knowledge of the Moon, but planned by people on the ground who were supporting them. They had the aid of communications systems, of navigation systems, of telemetry, of all sorts of instruments. Watching the kind of work being done on *Calypso*, it had great similarities. In fact, we did a joint project last summer in the Caribbean to try to see whether satellites can help determine the shallow ocean depths, the depths of the ocean where ships tend to run aground and spew oil all over. It was an experiment to decide whether a spacecraft called Landsat, or a variation thereof, could make those measurements on a global basis, because if you do it without a satellite, it is going to take you forever to make them.

SB: Most experiments don't work. How did this one turn out?

Low: Well, I think it was partially successful. We determined that down to a certain depth it can work. But the intriguing point was that in this experiment, thirty different satellites were involved, because they are the modern tools of science, the modern tools of exploration. There were six navigation satellites, I think, three or four weather satellites, the Landsats — two of them that actually made the measurements — communications satellites, direct communications back with NASA's Space Flight Center in Washington to help direct *Calypso*, to send weather maps back and forth, and to send photos of their area taken by a satellite that had just gone over. The *Calypso* divers were making measurements in the water of all sorts of quantities, of how the light was hitting the water, how turbid it was, things that others here can explain much better than I can. Instruments on *Calypso* were verifying how deep the ocean was while instruments in the satellites were making measurements and telling *Calypso* exactly where she was with a precision of what, feet? It was a tremendous example of how modern tools of scientists can be put together to get a better understanding of this globe we live on. I think that's really the key to our total future. We've got to use all of these tools, whether they're on the ocean, whether they're under the ocean, whether they're in Space, to help understand the fundamental factors that govern our environment, our life, and everything else, before we can really help fix it.

SB: This is not widely perceived among environmentalists. In my experience most of them regard NASA as irrelevant.

Cousteau: May I add to what George has said? Three things. One is that we are using satellites already for the study of

another environment than outer space. This is the land surface and weather. The second thing is, the very elaborate instrumentation in Space that we were using to support a very primitive instrumentation in the water demonstrates the fact that we have not yet started harmonizing the tools to work together. There is a big gap between the quality and the sophistication on both sides of the surface.

A third reason why we are trying to work together was illustrated to me (I'm not going to say this for my own glory, it's just because it is a matter of fact) when I was at the Jet Propulsion Laboratory discussing with all these scientists and looking at a program of Seasat, I had great hopes when I heard the word Seasat, "Ah, at last, an oceanographic satellite." Then I went to Jet Propulsion Lab, and it was a demonstration of the fact that oceanography is a very complicated, unrefined science. Most of the specialists, beautiful scientists in oceanography, they look at their own little alley, and they don't have a general global view, which I by definition have because I do not go very far in each one of these alleys. I'm more or less a sponsor of scientists than a scientist myself. Speaking their language, I can collect and try to synthesize what they're doing. To establish a program by putting together all the scientists into a committee will result in very little, because each one will pull on his side. There is a need for someone who understands the global problems of the ocean.

Schweickart: Jeek, you were talking about determining a "vitality" index for the oceans . . .

Cousteau: We are still working on that and we are not very far because of the hostility of some specialists. It's very very funny. What Rusty is saying is that we need to understand realistically what's happening in the ocean. Our divers look to the place where they have been twenty years before, and they see that it is going down the drain. They are unable to quantify, it is not a measurement, it is a subjective impression, and in science subjective impressions are laughed at. They are not considered as serious. I don't think it's right, because subjective impressions have their importance but nevertheless you cannot say, "I have observed a reduction in the general vitality of the ocean," without having scientists say, "Ha ha ha, how much, how do you measure it?" So we have to measure it. We have to determine an index, a coefficient that is not measuring really anything, but that will be comparable to itself over the years. It's like IQ. IQ doesn't mean anything. But it's comparable. And this is the type of coefficient that I want, using only measurements that can be done almost by anyone, not too difficult.

SB: This would be like the number of species in an area, the amount of bio-mass in an area, or what?

Cousteau: That's too complicated. We have to find a more synthesizing thing. For the moment I'm orienting my research on the hormones that are excreted by animals in the water.

SB: It would be a straight chemical test then?

Cousteau: Yes.

Low: But aren't you talking about very very slowly changing quantities?

Cousteau: The trouble is that these hormones disintegrate pretty rapidly. It's on the contrary very instantaneous measurement.

Low: Yes, but over time the changes are relatively slow, so you have to be in a position to make very very fine measurements.

Cousteau: I have the impression that if we had started this 20 years ago, we would already see at least 40 percent decrease.

Schweickart: In certain areas like the Mediterranean?

Cousteau: In most areas.

Low: We're facing a problem in Space now like that – the ozone layer. What are we doing down here on the surface of the Earth that may be destroying the ozone layer and destroying life on Earth ultimately.

Cousteau: It's very minute changes.

Low: Very very minute changes over any period of time over which you can make these measurements. In fact, the noise that changes daily because of other things may be much larger than the signal you're trying to measure. So the real question is how you make these measurements over a long enough period of time to really determine what's happening. I think what you're doing in the ocean leads very much to those kinds of measurements. We're worrying about things that may be perceived only over a period of five or ten years. Yet they become terribly important to what's going to be alive on the earth within 50 years.

Cousteau: George, I suppose you agree that even if you need five or ten years to understand it, you have to start.

Low: You have to. In fact, there's an interesting side-line to this ozone problem. That is, that this might be a problem was identified many years earlier than it otherwise would have been because we were looking at the planet Venus.

SB: Because of comparative data, or because of the sensing apparatus that you developed for Venus being used here?

Low: A little bit of both. It's really an analytical tie. Looking at Venus, the atmospheric scientists started asking themselves the question, "Why do we see in the upper atmosphere of Venus only carbon dioxide and no carbon monoxide? Why doesn't the Sun dissociate the carbon dioxide and make it into oxygen and carbon monoxide?" The answer was that there had to be another gas present that immediately recombined it. They then applied that same theory to the upper amosphere of the Earth, and said, "What would happen if there were chlorides present in the stratosphere of the Earth?" The answer was: they would surely dissociate the ozone, the ozone layer which protects us in keeping the ultra-violet light from hitting the surface of the Earth. It would dissociate the ozone into oxygen – O and O_2. Having

Photograph from Skylab III. The cloud formations cupped around areas of clear ocean may indicate cold water upwellings, nutrient rich. The feature on the right is an island.

asked that question, they said, "Well, are there any chemicals being released on the surface of the Earth that might destroy the ozone layer?" And the answer was: it could well be the freons that are used in all the spray bottles. That's how this problem was discovered, probably a number of years earlier than it would otherwise have been discovered, and that's why it's being attacked so vigorously now.

Schweickart: Although we still in fact don't know what the effect is of the lower atmospheric release of these things on the ozone layer. One of the more interesting pieces of data that we've seen in the analysis of ozone data we've collected over the last five years, (we're still not done with that analysis, it's a very laborious process) but in the two and a half years or so of data which we have analyzed, the largest identifiable change in a cause-and-effect relationship was, as I recall, a solar flare, which released a great number of particles, which then had their effect in the upper atmosphere. There was a noticeable drop in the ozone concentration, which took something between 30 and 90 days to come back up to normal. So can you say that one medium-sized solar flare equals 10^6 sweet-smelling armpits, or some equivalent measure? We don't really know that yet.

SB: What kind of an index would you call that? Well, Jacques, are you interested in being an astronaut?

Cousteau: Well, it would be my dream, yes. But of course it's a matter of age. I should have started earlier.

Schweickart: It's a matter of vitality, Jeek, not age.

Low: Von Braun made a speech about five years ago which said, in effect, "Five years ago I was too old to fly in space. Ten years from now, I will again be young enough, because then we'll have the space shuttle."

Cousteau: It's obvious that for me to have a visual contact with the ocean I have devoted my entire life to from outer Space would be the ultimate. Especially if I have the proper instruments. As I have said to NASA several times, I'm ready to go any time, but of course obstacles are formidable. Money, program, instrumentation, all those things. I'm keeping in as good a shape as possible in order to eventually be able to go.

SB: What are the stresses on someone with the shuttle? Would that be reasonable?

Low: Well, since I intend to be there when he flies, and fly with him, the answer is yes. Seriously, the environment in the shuttle ought to be one that an average human being in reasonably good physical shape ought to be able to fly in. We still don't understand some of the problems that we faced back in Apollo and Skylab. Why does everybody tend to get motion sick for a day or two? That applies to the best trained astronaut as well as to somebody who's never been in space.

SB: Do you think that'll happen to you, Jacques? Do you get seasick at sea?

Cousteau: I did, in my youth. No more at the moment, but it may come back. You never know. But very rarely.

SB: Did you, Rusty?

Schweickart: Yeah. On Apollo 9 I avoided the issue for two days by not moving around, thinking that was the right thing to do. We know a little better now. On the third day, when I had to move around, I went through the Space sickness thing for a day, and then after that was okay again.

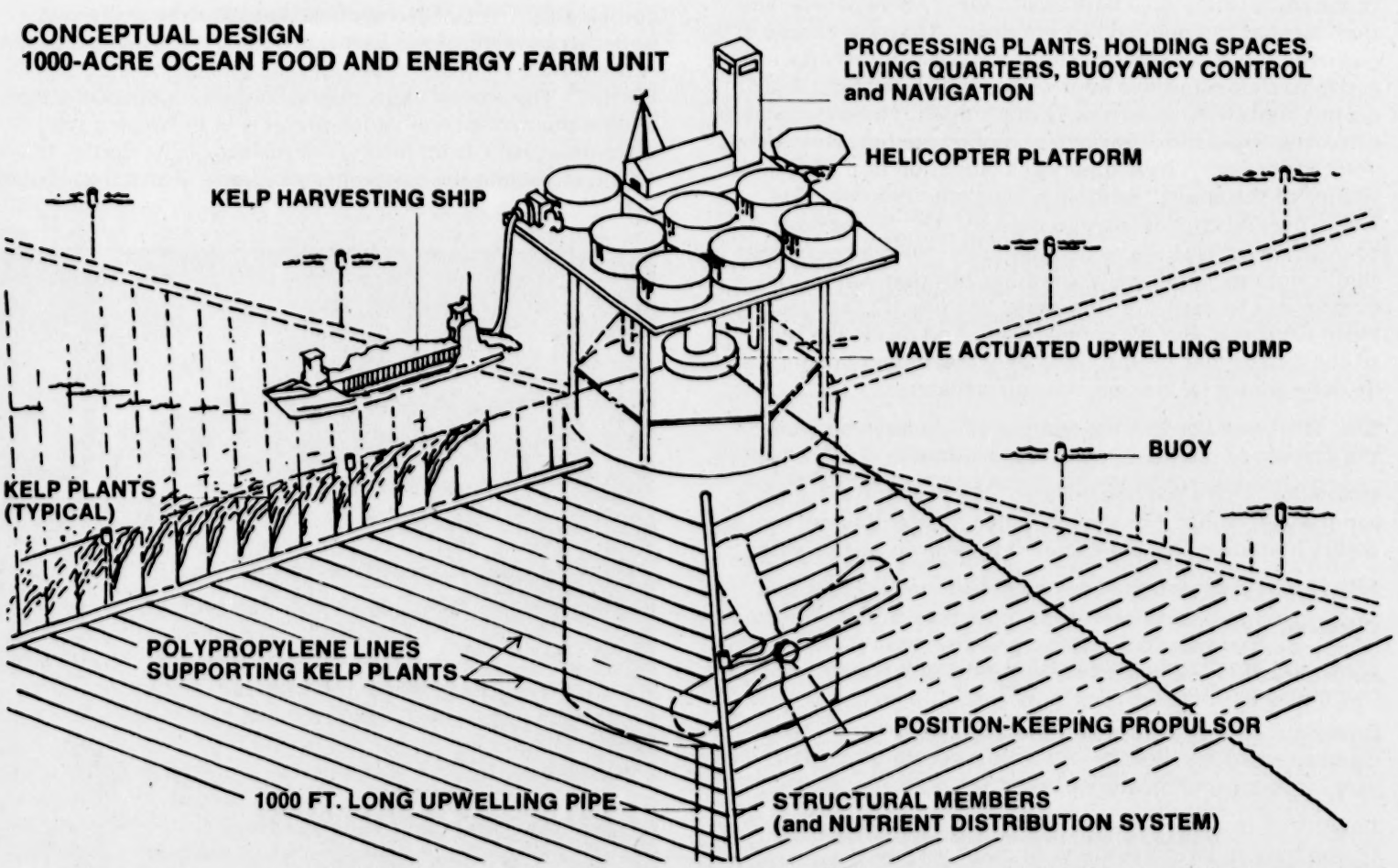

CONCEPTUAL DESIGN
1000-ACRE OCEAN FOOD AND ENERGY FARM UNIT
PROCESSING PLANTS, HOLDING SPACES, LIVING QUARTERS, BUOYANCY CONTROL and NAVIGATION
HELICOPTER PLATFORM
KELP HARVESTING SHIP
WAVE ACTUATED UPWELLING PUMP
BUOY
KELP PLANTS (TYPICAL)
POLYPROPYLENE LINES SUPPORTING KELP PLANTS
POSITION-KEEPING PROPULSOR
1000 FT. LONG UPWELLING PIPE
STRUCTURAL MEMBERS (and NUTRIENT DISTRIBUTION SYSTEM)

Illustration from "The Ocean Food and Energy Farm Project" by Howard A. Wilcox, distributed recently to the 150,000 members of the Cousteau Society. Dr. Wilcox presents a persuasive argument for open ocean kelp farming for food and energy use. "The marine farm concept is 'conservatively' projected to yield enough food to feed 3,000 to 5,000 persons per square mile of ocean area cultivated, and at the same time it will yield enough energy and other products to support more than 300 persons at today's U.S. per capita consumption levels, or more than 1,000 to 2,000 persons at today's world average per capita consumption levels." [Sent by Bill Steinberg]

SB: Once the shuttle gets really rolling, how many people is this apt to mean in space at any time?

Low: You know, we are terribly short-sighted when we project those kinds of things, because things happen much quicker than we expect, but we're talking about something like 40 to 60 flights a year.

SB: How many people on the bus each time?

Low: Say an average of 5. That's 200 people in space per year.

SB: Do you think this will change the public idea of the usefulness of Space, having that much traffic?

Low: Last Sunday I was preparing a speech I'm going to give in Salt Lake City this Friday night. It's a Bi-centennial event, and I thought one way of doing this is to go to the Tri-centennial and look back. I was trying to estimate how many babies will have been born in space by the year 2076. I came up with a number, I have no idea whether it's believable or not. I said it will be the event of the 100,000th birth in space.

Cousteau: 100,000th?

Low: I had a much smaller number at first, and then I thought, it's probably going to be larger.

Schweickart: That would assume Space colony.

Low: It assumes Space colonies, and I figured by that time half a million people living in Space.

SB: Would these still be mostly Americans at that point, do you think? Or what?

Low: I'm not going to predict that. I stole a line from Carl Sagan's piece in your last magazine – "It's the 21st-century equivalent of 19th-century America." That it'll be limited to Americans I doubt very much. I just don't see how it can be.

SB: Did you see this quantity of people being mostly still in the vicinity of Earth, or scattered rather thinly in the Solar System by then?

Low: I guess I look at it as still being relatively close to the Earth-Moon system, and still counting on some resources from the Earth or the Moon or the nearby planets, but I may be wrong on that. You know, I was deeply involved in Apollo and the lunar landing, yet if you'd asked me in 1957, before Sputnik, twelve years before the lunar landing, when did I think a man would first set foot on the Moon, I don't think I would have said 1969. I doubt whether I would have said 1979, I might have said 2009.

SB: Is that rate defined more by technical matters or by political matters? That it was '69 was largely a political decision by Kennedy.

Low: It was a technical capability and a political decision.

SB: Gerard O'Neill claims that his Space colonies in most of the configurations he's thought of so far are technically feasible. Does that seem realistic to you?

Low: Yes. Now, I'm not sure whether they will look exactly like his Space colony, but I've seen nothing yet in the debate on those that says that it's not possible to do it technically.

SB: How about the short-term benefits, the cost-effectiveness, the political sexiness of the thing? He indicated a schedule of fifteen or twenty years to get a serious colony going. Does that seem realistic?

Low: Not to me today. But again, I'm an arch conservatist. I see other needs first.

SB: Such as?

Low: Solar power from Space. I don't know whether that's going to come or not, but it's intriguing, it looks possible, that we might be able to collect solar energy in Space, and beam it down to the surface of the Earth to use it without doing all the bad things that we do when we generate power in any other way. I think that will probably take up our financial resources in the years where O'Neill first visualizes space colonies. But also they will help teach us how to build those colonies. There's an awful lot of things that we need to do in generating power in Space that will lead toward the colonies.

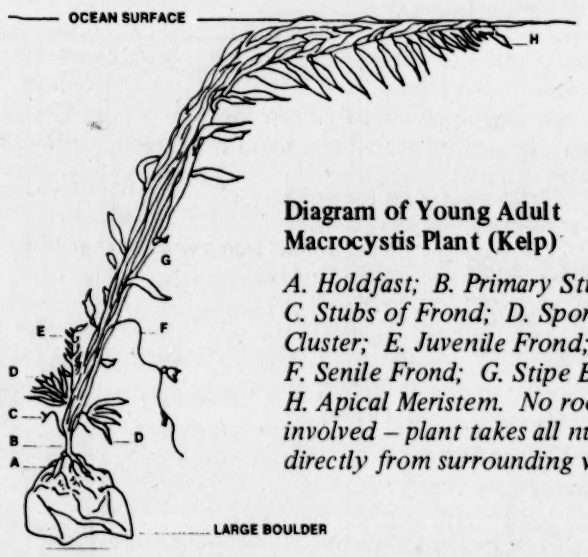


Diagram of Young Adult Macrocystis Plant (Kelp)

A. Holdfast; B. Primary Stipe; C. Stubs of Frond; D. Sporophyll Cluster; E. Juvenile Frond; F. Senile Frond; G. Stipe Bundle; H. Apical Meristem. No root involved – plant takes all nutrient directly from surrounding water.

SB: Jacques, I'm curious about your longterm vision of what's going to happen? You said last night that you expect a major calamity in the next 50 years – or string of calamities – that would leave only 1 in 10 people alive and only 1 in 10 species alive. And that then a much more harmonious far-reaching ingenious civilization would develop. How does any of that relate to Space?

Schweickart: Do you see us moving out, Jeek, before the major calamities?

Cousteau: I think the calamities that we are talking about are inner calamities, which means that when they spread there will be no moving out possible, because there will be chaos as well in NASA as in the street. When we are projecting that far I'm not serious. I think that we have our duty today to work in the direction that might reduce the chances for such a calamity and in any event reduce the size of the calamity.

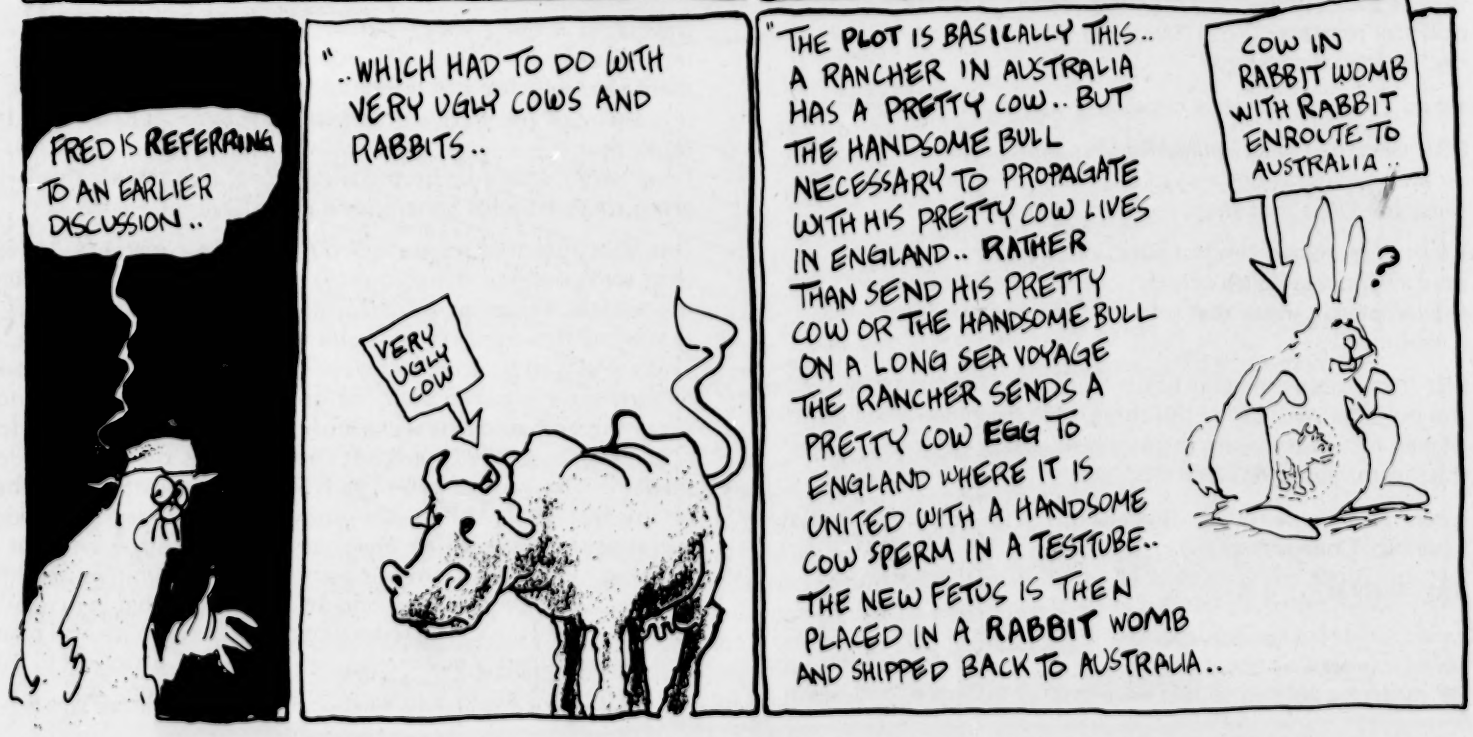
Schweickart: Do you put some of your resource into the generation of life boats, even though you put most of your resource into the good navigation of the ship?

Cousteau: I think we certainly will have communities in outer Space some day, and probably we will find uses for them that we have not anticipated, but I do not think that it is a way of life to live off the planet, same as I do not think that it is a way of life to live in underwater cities. I feel very much attached to my planet, and I think this is going to be true for generations to come.

One anecdote that happened to me just four days ago. I was with two eminent archeologists on a small island across from the ancient harbor at Knossos, Crete. We spotted from the ship some not ruins really, but a very old construction site. There was a slope which obviously had been polished by pre-historic man to pull a boat out on the rock. We landed, and while the archeologists were looking in the neighborhood for artifacts – and they found not much – I was picking up wild flowers. The very simple little flowers, I associated with them on this hot day. While I was doing so I discovered the hidden entrance to a cave which they had been passing by without noticing. We entered this cave and it was a primitive neolithic temple. So it's just by looking at the flowers that you may have the discovery. The specialists look at progress and science and see nothing. You have to remain deeply attached to the Earth if you want to understand what's going on. ■

Dan O'Neill's customary four pages:

..BUT YOU DON'T HAVE ANY PROOF!!
I. DON'T NEED PROOF!!
..BUT I NEED PROOF!!
HUGH.. HISTORY NOT ONLY REPEATS ITSELF.. IT STUTTERS!
IT'S STILL FANG AND CLAW OUT THERE.. SCIENCE HAS BROUGHT US BIGGER FANGS, THAT'S ALL..
I JUST DON'T WANT TO AGREE WITH YOU, FRED.. THAT IS TOO DEPRESSING!!
FREE LUNCH COMIX AND STORIES
STARRING FRED AND HUGH..
HUGH.. I DON'T WANT TO AGREE WITH ME.. SO WHAT? THAT DOESN'T CHANGE ANYTHING..
..BUT THE WORLD COULD BE A BETTER WORLD, RIGHT?
..WHAT IT COULD BE AND WHAT IT WILL BE ARE TWO DIFFERENT ANIMALS..
DON'T FORGET THE RABBITS, HUGH..
BUT THAT'S SUCH AN AWFUL PREDICTION..


FRED IS REFERRING TO AN EARLIER DISCUSSION..
"..WHICH HAD TO DO WITH VERY UGLY COWS AND RABBITS..
VERY UGLY COW
"THE PLOT IS BASICALLY THIS.. A RANCHER IN AUSTRALIA HAS A PRETTY COW.. BUT THE HANDSOME BULL NECESSARY TO PROPAGATE WITH HIS PRETTY COW LIVES IN ENGLAND.. RATHER THAN SEND HIS PRETTY COW OR THE HANDSOME BULL ON A LONG SEA VOYAGE THE RANCHER SENDS A PRETTY COW EGG TO ENGLAND WHERE IT IS UNITED WITH A HANDSOME COW SPERM IN A TESTTUBE.. THE NEW FETUS IS THEN PLACED IN A RABBIT WOMB AND SHIPPED BACK TO AUSTRALIA..
COW IN RABBIT WOMB WITH RABBIT ENROUTE TO AUSTRALIA..
?

A CARGO OF RABBITS PREGNANT BY AND WITH COWS DOESN'T TAKE UP MUCH SPACE OR WEIGH A GREAT DEAL..

RABBIT BOAT

THE SAME AMOUNT OF COW EMBRYOS IN COWS WOULD SINK THE SHIP.. THIS ARRANGEMENT IS A DISAPPOINTMENT IN AUSTRALIA .. AND IS ALSO ROUGH ON COWS..

EX-COW BOAT

SO LONG, COWS..

AFTER TWO WEEKS OF THE RABBIT, THE PRETTY COW EMBRYO IS TRANSFERRED TO AN UGLY COW.. THE UGLY COW GIVES BIRTH TO THE PRETTY COW.. THE MOTHER OF THE PRETTY COW THUS RETAINS HER FIGURE.. NO ONE WILL TELL US WHAT HAPPENS TO THE RABBIT.. AFTER THE EMBRYO IS REMOVED..

OOF

RUMBLE RUMBLE

BUT WE DO KNOW WHAT HAPPENS IF THE COW EMBRYO IS NOT REMOVED..

THE BUNNY EXPLODES!!!

FRED BELIEVES THAT SOMEDAY PEOPLE ON WELFARE WILL BE USED MUCH LIKE THE UGLY COWS..

IN ORDER TO QUALIFY FOR FOOD STAMPS, YOU'LL HAVE TO GIVE BIRTH TO AN EPISCOPALIAN..

EPISCOPALIANS WILL HAVE CHILDREN WITHOUT PAIN, OR THE LOSS OF THEIR FIGURES.. WELFARE FOLKS WILL HAVE A ZERO BIRTHRATE .. SO EVENTUALLY THERE WON'T BE ANY WELFARE FOLKS..

EXCEPT TO SUPPLY US WITH EPISCOPALIANS..

..WITH NO POOR FOLKS COMPLAINING ABOUT THE DESTRUCTION OF THE ENVIRONMENT WE CAN GET DOWN TO THE SERIOUS BUSINESS OF RIPPING THE PLANET APART..

I DON'T FOLLOW YOU..

"OIL, KID," SEZ FRED.. "WE NEED THE STUFF.."

FRED.. YOU ARE NOT MAKING ANY SENSE TO ME AT ALL!! WHY OIL, AND NOT GOLD OR SILVER..? AND WHY ELIMINATE OUR POOR PEOPLE..?

POWER POWER POWER POWER

WHAT ??

KID.. YOU REMEMBER THE STORY OF THE GENTLEMAN IN RED WHO OFFERED ALL THE POWER AND WEALTH OF THE EARTH TO A CERTAIN MESSIAH..?

YEAH.. SO?

"SO THE GENTLEMAN IN RED SAID, 'ALL THIS **I** WILL GIVE **YOU** IF YOU WILL BOW DOWN AND WORSHIP ME..' AND THE MESSIAH TURNED HIM **DOWN**, RIGHT?" SEZ FRED.. "RIGHT", SEZ HUGH.. "THE POINT IS," SEZ FRED, "THAT MESSIAH WAS THE **ONLY ONE** WHO **DID** TURN HIM DOWN.."

BUZZ OFF!

COLOR T.V.! MICROWAVE OVEN! YACHTS!!

"YOU MEAN..?" SEZ HUGH..

"RIGHT" SEZ FRED, "EVERY ONE ELSE HE MADE THE OFFER TO HAS **ACCEPTED**!!"

AND, I MIGHT ADD, SINCE **TURNING** DOWN THAT OFFER, **THAT** PARTICULAR MESSIAH HAS BEEN **UNEMPLOYED**!!

..BUT **WHAT** DOES THIS HAVE TO DO WITH **OIL**?

"**OIL**" SEZ FRED, "..MOVES THE ARMIES.. ALL THE GOLD AND SILVER IN THE WORLD WON'T START A TANK.."

..O.K! IF SOMEONE **HAS** ACCEPTED THE OFFER FROM THE GENTLEMAN IN RED.. AND **OIL** IS THE MAIN LINK IN THE POWER CHAIN THAT BINDS US, ANSWER ME THIS ONE QUESTION..

SHOOT..

IF THIS SOMEONE HAS ACCEPTED THE OFFER.. AND IF THE OFFER IS VALID.. **WHY** IS EVERYONE FIGHTING? THIS SOMEONE SHOULD BE IN CHARGE, RIGHT? HANDS DOWN, THIS SOMEONE SHOULD OWN THE WHOLE SHOW!!

IT'S **NOT** THAT SIMPLE..

YOU SEE, HUGH.. HE'S MADE THE OFFER TO **MORE** THAN **ONE** SOMEONE.. AT **LEAST THREE** SOMEONES ARE OPERATING AT THIS MOMENT..

HE **LIED**? HE SAID HE WOULD GIVE THE WHOLE WORLD TO **ONE** SOMEONE..

..AND HE ALSO GAVE IT TO **TWO** OTHER SOMEONES? THAT'S CHEATING!!!

..CONSIDER HIS REPUTATION BEFORE YOU HOLD IT AGAINST HIM..

IN ANYCASE, ALL THESE SOMEONES ARE RUNNING AROUND YELLING AT THE OTHER ONES.. "**IT'S** MY WORLD AND THE **DEVIL** TOLD ME SO!!"

BIFF! BAM!

THAT'S WHEN THE FIGHT STARTS!

POW!

IN WORLD WAR **I**, FOR **TWENTY** DEAD SOLDIERS THERE EXISTED **ONE** DEAD CIVILIAN.. IN WORLD WAR **II**, FOR EVERY SOLDIER KILLED THERE WAS A CIVILIAN KILLED.. IN VIETNAM, FOR EVERY DEAD SOLDIER **THIRTEEN** CIVILIANS WERE KILLED..

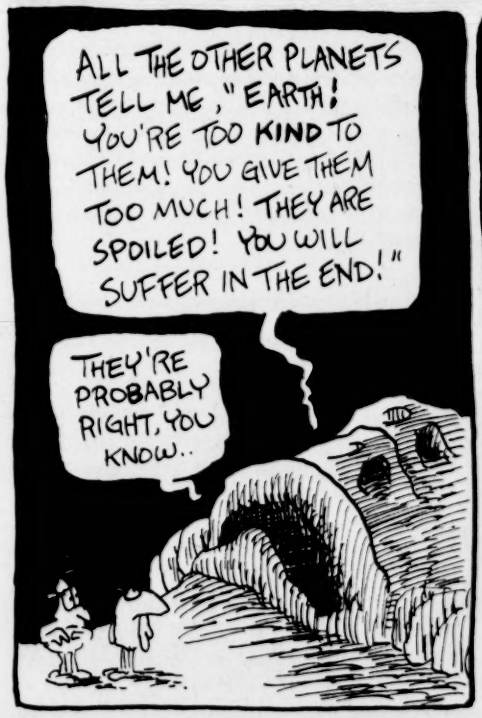
THE RATIO REVERSED!!

HUGH.. THE RATIO TELLS US HOW **WELL** HE IS DOING.. BUT **WHAT** HE IS **DOING** IS EVEN **BETTER**.. HE'S OUT TO **KILL** EVERYBODY!!

EVERY BODY ??

EVERY LIVING THING!!

..SOON I COULD BE A DEAD PLANET.. ALL WILL HAVE BEEN FOR NOTHING..
FRED?
SHHH! WHEN THE EARTH BITCHES, WE LISTEN !!


ALL THE OTHER PLANETS TELL ME, "EARTH! YOU'RE TOO KIND TO THEM! YOU GIVE THEM TOO MUCH! THEY ARE SPOILED! YOU WILL SUFFER IN THE END!"
THEY'RE PROBABLY RIGHT, YOU KNOW..

..BUT THEY DON'T UNDERSTAND.. IT'S HARD FOR A MOTHER TO PUNISH HER CHILDREN..EVEN WHEN IT'S GOOD FOR THEM..
LET'S SPLIT..

WHERE DID I GO WRONG? WHY MUST MY CHILDREN KILL EACH OTHER? MAYBE I'M A BAD MOTHER? MAYBE, INSTEAD OF TOO MUCH, I DIDN'T DO ENOUGH!!
FRED?
WHAT?

I, FOR ONE, REFUSE TO CONTRIBUTE TO THIS DESTRUCTION ANY FURTHER!
CON GRAT ULATIONS!

YOU WIN A TOASTER, A HAIRDRYER, A NEW TAPE RECORDER AND A COLOR T.V. !!

HAHAAHAA HOHO HAHAA
SARCASTIC BASTARD, ISN'T HE..
..HE KNOWS YOU'LL SELL OUT CHEAP..
O'NEILL

Prisoner of Mao

There is often a strange one-dimensionality about most accounts of China. Of the visitors who have travelled to China over the last decade, most of their reports have left me with a sense of flatness. It is not that the writers have failed to accurately set down what they have seen and heard, but rather that their connection with the Chinese Revolution was limited much in the same manner that a tourist's perceptions are limited anywhere. A tourist sees and hears, but does not experience any deep act of involvement with people or the land through which he passes. Most westerners who have journeyed to China have been little more than flies walking around on the outside of a bottle looking in. It is not that they do not wish to get inside and get involved, but rather that the Chinese seem wary to allow visitors (or even most foreign residents) to get under their skin. And so, China and the Chinese revolution is transmitted to us as an idea, a concept, surrounded by a lot of evidence of its efficacy. But the questions of personality, feelings, longings, hatreds shine through only dimly. Instead, we are treated to a totalistic world where the actors are "resolute" and "defiant," the leaders are "great" and "heroic," and where actions are "carried through to the end," with "undying militancy." It is almost as if the writers had lost the ability to distinguish between the ideology and doctrine of this revolution and the revolution itself. It appears to be a revolution with few ambiguities or nuances.

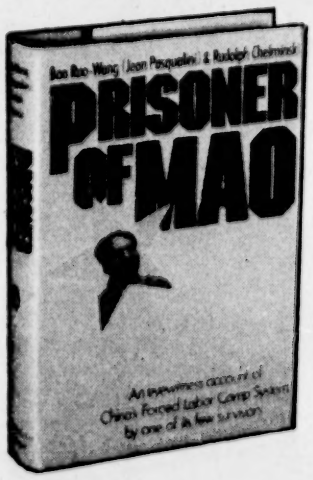
Bao Ruo-wang, or Jean Pasqualini (his father was Corsican and his mother was Chinese), was a tourist of a different kind. Because he had worked with the U.S. military before 1949, he ended up spending seven years in various Chinese jails as a counter-revolutionary. Because he carried a French passport, he was released when France recognized China in 1964. He left China with a rare experience (although extremely painful and depressing) that is unique. He has seen China from another side, and has written a marvelously interesting book.

One might think that as a Prisoner of Mao he might be somewhat of an anti-communist at this point. Interestingly enough he is not. He speaks matter of factly about the hunger, cruelty and process of thought reform that he endured. He reflects on it, puts it not only in the context of his feelings but of the greater goals of the Chinese Revolution. He is neither bitter nor vindictive. Out of the three hundred pages of anecdotes which comprise this book, one comes away with the sense of a revolution which is at once hopeful and positive, but also at times cruel, mis-managed and blind. Because of the author's unpolemical honesty, one begins to see a revolution of great complexity; a movement of real significance in history. And, it is indeed ironic that it is a victim that ends up being the champion of the Chinese revolution; not the seemingly errorless revolution of Peking Review but one which combines features of both perfection and imperfection and is thus ultimately much more interesting.

—Orville Schell

[Suggested by Ivan Illich. Orville has a series of articles on China appearing in the New Yorker *this summer. During a meeting with Governor Jerry Brown, Illich said he could not understand why everyone has so studiously overlooked this book — it is the only thing out of China that he finds believable.]*

Prisoner of Mao
(An eyewitness account of China's Forced Labor Camp System by one of its few survivors)
Bao Ruo-wang (Jean Pasqualini) and Rudolph Chelminski
1973; 318pp.
$8.95 postpaid
from:
Coward, McCann & Geoghegan, Inc.
200 Madison Ave.
New York, NY 10016
or Whole Earth


Bao Ruo-Wang / Jean Pasqualini & Rudolph Chelminski
PRISONER OF MAO
An eyewitness account of China's Forced Labor Camp System by one of its few survivors

"A living hell" is the popular image inevitably conjured up by the idea of Communist labor camps. There is truth in the image, of course, but it is distorted because it is incomplete. The reality, the most exquisite irony that I discovered as the years slipped by, was the same that had already been testified to by the survivors of Stalinist camps: Not only is the society within the camps in many ways purer than the larger one outside, but it is also freer. It is in the prisons and camps that the notions of friendship and personal freedom are the most highly developed in China.

•

It doesn't take a prisoner long to lose his self-confidence. Over the years Mao's police have perfected their interrogation methods to such a fine point that I would defy any man, Chinese or not, to hold out against them. Their aim is not so much to make you invent nonexistent crimes, but to make you accept your ordinary life, as you led it, as rotten and sinful and worthy of punishment, since it did not concord with their own, the police's, conception of how a life should be led. The basis of their success is despair, the prisoner's perception that he is utterly and hopelessly and forever at the mercy of his jailers. He has no defense, since his arrest is absolute and unquestionable proof of his guilt. (During my years of prison I knew of a man who was in fact arrested by mistake — right name but wrong man. After a few months he had confessed all the crimes of the other man. When the mistake was discovered, the prison authorities had a terrible time persuading him to go back home. He felt too guilty for that.) The prisoner has no trial, only a well-rehearsed ceremony that lasts perhaps half an hour; no consultation with lawyers; no appeal in the Western sense. I say in the Western sense because there actually is a possible appeal, but it is such a splendidly twisted, ironic caricature that it is worthy of the best talents of Kafka, Orwell or Joseph Heller.

•

"I have something awful to speak about. I'm not happy to do it and it's nothing to be proud of. But it is my duty and it should be a lesson for you. This rotten egg here was jailed on a morals charge — homosexual relations with a boy. He only received seven years for this offense. Later, when working in the paper mill, his behavior was constantly bad and he stole repeatedly. His sentence was doubled. Now we have established that while here, he seduced a young prisoner nineteen years old — a mentally retarded prisoner. If this happened in society, he would be severely punished. But by doing what he did here, he not only sinned morally but he also dirtied the reputation of the prison and the great policy of Reform Through Labor. Therefore, in consideration of his repeated offenses, the representative of the Supreme People's Court will now read you his sentence."

The man in the blue uniform strode forward and read out the somber document, a recapitulation of the offenses that ended with the decision of the People's Court: death with immediate execution of sentence.

Everything happened so suddenly then that I didn't even have the time to be shocked or frightened. Before the man in the blue uniform had even finished pronouncing the last word the barber was dead. The guard standing behind him pulled out a huge pistol and blew his head open. A shower of blood and brains flew out and splattered those of us in the front rows. I looked away from the hideous twitching figure on the ground and vomited. Yen came up to speak again.

"Let this serve as a warning to you. I have been authorized to tell you that no more leniency will be shown in this camp. From now on, all moral offenses will be punished in the same way. Now go back to your cells and discuss this."

•

There is nothing in China to limit the sentencing power of the government. The common analogy is the rubber band — a sentence can be stretched or abbreviated, depending on dozens of nonobjective factors. A man sentenced to life might well become a free worker before his cellmate who was sentenced to ten years. A committee of three or four persons who know the prisoner makes the judgment of sentence. One of them might be a policeman who had been watching him on the outside, another the interrogator and

another his scribe. Together they decide on a fitting sentence and then, depending on their attitude toward the accused, begin embroidering on it. If, as in my case, the actual sentence was twelve years, they might announce twenty to him, or even life. As always, the prisoner is told that he can lighten his sentence by making the necessary efforts and showing himself to be a model for the others. So perhaps after one year of furious effort he will be rewarded by a gift from the state: a sentence reduction from life to twenty years. Radiant and grateful, he becomes even more so the perfect prisoner, and after three more years he is reduced to only fifteen years. Two years later the sentence is reduced to ten years — ten more years only! Since he has already served five, and continues to behave with zeal and gratitude, they wait until he has served seven more (to make his original twelve years). It is at this moment that the government, in its generosity, decides on an amnesty. Twelve years instead of life! The man becomes a free worker with a song in his heart, thinking only of helping to build socialism.

A Canticle for Leibowitz

The fiction books I watch for are the ones that change people's behavior. To do that they must present a world so complete and engrossing that the reader becomes immersed and suffers the fictional events personally. **From Here to Eternity** *does that. Tolkien, T. H. White, and Doris Lessing can do it. And* **A Canticle for Leibowitz**, *one of the half dozen masterpieces of science fiction, does it.*

The argument is that civilization has self-destructed by nuclear war. Through the ensuing dark centuries a Catholic monastery in southern Utah secretly guards the few surviving books in wait for a reawakening that it cannot imagine. What carries the book is the power and subtlety of its portrayal of character, history, monastic routine, the function of abbots, and the moral function of an utterly conservative Church. It is a book full of surprises, humor, and grandeur by detail.

—SB

A Canticle for Leibowitz
Walter M. Miller, Jr.
1959; 278pp.
$1.25 postpaid
from:
Bantam Books, Inc.
414 E. Golf Rd.
Des Plaines, IL 60016
or Whole Earth

So it was that, after the Deluge, the Fallout, the plagues, the madness, the confusion of tongues, the rage, there began the bloodletting of the Simplification, when remnants of mankind had torn other remnants limb from limb, killing rulers, scientists, leaders, technicians, teachers, and whatever persons the leaders of the maddened mobs said deserved death for having helped to make the Earth what it had become.

•

The twenty-first Leo took the ancient blueprint in his withered hands and carefully unrolled it. He studied its design for a time in silence, then: "Tell us, do you understand the symbols used by Leibowitz? The meaning of the, uh, thing represented?"

"No, Holy Father, my ignorance is complete."

The Pope leaned toward him to whisper: "So is ours."

•

Really, Doctor Cors, the evil to which even you should have referred was not suffering, but the unreasoning fear of suffering, *Metus doloris*. Take it together with its positive equivalent, the craving for worldly security, for Eden, and you might have your "root of evil," Doctor Cors. To minimize suffering and to maximize security were natural and proper ends of society and Caesar. But then they became the only ends, somehow, and the only basis of law — a perversion. Inevitably, then, in seeking only them, we found only their opposites: maximum suffering and minimum security.

Thoughts

Whether or not he becomes President, Jerry Brown is having more influence than anyone on American politics. He has his own ideas, acts accordingly, and the citizens keep supporting him. And then other politicians imitate him.

He's widely reported as an enigma, mostly because the reporters don't get his jokes or don't get that they are jokes. Also he can learn before your very eyes, and so no statement of his is set in concrete. He entertains ideas constantly and anyone with him likewise.

This book of quotes assembled by Lawrence Ferlinghetti is the only thing out on Brown. That itself is pretty interesting.

—SB

Thoughts
Edmund G. Brown, Jr.
1976; 79pp.
$2.00 postpaid
from:
City Lights Books, Inc.
1562 Grant Ave.
San Francisco, CA 94133
or Whole Earth

You don't have to *do* things. Maybe by avoiding doing things you accomplish quite a lot. Maybe if Kennedy had avoided the Bay of Pigs or Vietnam, that would have been quite an accomplishment.

•

I think I serve the people best by concentrating. I find that to make state government effective I have to reserve my effort to the most important issues that I think by getting into I can make a difference. And I'm relentless. When I get on an issue I can go 15 hours a day. Seven days a week.

•

There's an ecology to the legal and political system that we have. What is done in one part of the organism has an effect on the other.

•

The reason why everybody likes planning is because nobody has to do anything.

•

I was attracted and repelled by what I saw of politics in my father's house. Attracted by the adventure, the opportunity. Repelled by the grasping, the artificiality, the obvious manipulation and role-playing, the repetition of emotion without feeling, particularly that: the repetition of emotion.

•

. . . As long as everybody knows that when you add something to help A then you take from B. As long as we understand that it's — a what they call a zero-sum game, then I think we're on the right track. As long as Peter and Paul are in the same room I think you can make a wise set of choices. It's only when you rob collective Peter to help selective Paul that you get into your problems.

•

I think oftentimes those at the top have meaningful jobs and shouldn't really get paid additionally for them, but ought to be happy for the opportunity to serve people in that particular capacity. It's kind of a variant on "virtue is its own reward."

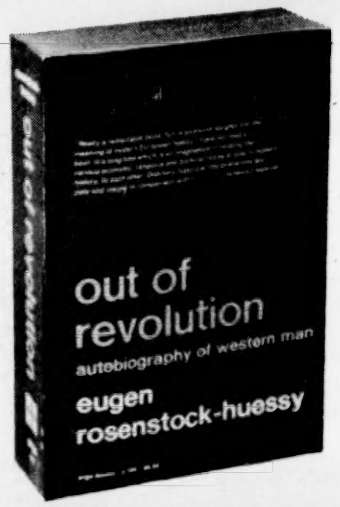
It could be that after some time and reflection we shall find Jerry Brown an anachronism whose time has come.

Joe Wolberg

Understanding Whole Systems

Out of Revolution

Why is this unknown history of the West raved about by Martin Buber, W. H. Auden, Lewis Mumford, Reinhold Niebuhr, and Page Smith? The author Rosenstock-Huessy, writing in 1938, is personal, passionate, deeply unconventional, and, I'm convinced, deeply right. For him history proceeds by its national revolutions, its passionate self-encounters that bind past and future and startle the world system to renewed life. I've never met a history book that was so biological, and biologically moral.



—SB
[Suggested by Richard Baker]

Out of Revolution
(Autobiography of Western Man)
Eugen Rosenstock-Huessy
1938, 1966; 770pp.
$6.95 postpaid
from:
Argo Books, Inc.
Norwich, VT 05055
or Whole Earth

We sum up our statements thus: It is not valid to pretend that the workers are exploited by the capitalists because they get low wages. The real outcry of man's offended nature should be that he is degraded because his boss does not care for his past or his future, and because he, the worker, is deprived of the power to weave past or future into his own day of work.

The boss, by virtue of the privileges conferred upon him by liberalism, hires a man's force and skill and presence and brains as a ready-made product. All the traditions that were needed to concoct this man's talents, and all the props that are needed to keep up his character, are degraded into his own private affair.

•

The German artisan and his relationship to his raw material, is, in every branch of German craftsmanship, very much akin to the attitude of the forester or the father.

In both cases, that of forestation and that of the father-land, things are produced which outgrow their progenitors. When Goethe in his first years at Weimar was almost in despair over his attempt to educate the Prince, he formulated the great prayer of his life thus: "O high fortune, let me achieve the day's work of my hands. No, these are not empty dreams; these trees, now lifeless sticks, will one day give fruit and shade." He might not see the results, but the future would bring with it a recurrent life. In this there was no vanity or ambition on his part. Goethe is not thinking of immortality, like a romantic hero. His trees neither will nor shall bear the name Goethe. But in their life he will be represented. Goethe also said: "He who has not begotten a child or planted a tree is no man."

To plunge into an objective world which follows its own rules but allows you to serve it, is the aim of the true civil servant. He is a layman, but he has a *field* (*Fach*). This objective world of "fields" is no mechanism: it embraces peasants, trees, animals, craftsmen, arts, sciences. It is growing and organic. It is God's world. You cannot mould it arbitrarily to your shape or in your image. The things of creation shall be carried to their destined goal by the help of man. His best inspiration, his knowledge, his training, have to give up their personal character, their *namedness* or fame, before they can penetrate into matter and make the son greater than the father.

This is not a townsman's vision. In the town a man earns his living by his visible labour, sees what he visibly does, and hears his reputation proclaimed most audibly every day. The civil servant in the remote corner of a wooded mountain belongs to an *invisible order*. Without this moral power, no brain trust can build up a civil service free from graft and the spoils system.

•

It is your own story that is told in this volume. That is to say: Any real man behaves in the volcanic hours of his own life as people behaved during revolutions. Those hours are extreme and terrible, yet they tell us more about the unity of human nature than soft days of peace from which behaviourists are apt to derive their political concepts. . . .

It is not the boastful John Falstaff, but St. John lying on the ground like one dead, to whom we must compare a nation in the birth-throes of conversion to its eternal role. In every-day life the most similar event was perhaps the act of the bride who passed from her parents' house into that of her suitor by the one word "Yes." If she meant it, the full content of her life, her choice and her destination, was implied in this moment. That is why the word spoken at such an hour has little to do with the gabbling which is also called language, but which is only the rubbish and off-scourings of creative speech. The bride's single word of reply has a power as divine as the "Let there be light" of the world's first day. Like the cry in an hour of revolution, her "yes" carries a weight as heavy as the most heroic action. It is a revelation of the woman's whole future, a decision over her whole past. It is irrevocable, and it is true.

Such words and such moments are rare in the life of the individual, and in the life of mankind as well. Daily life prefers half measures and half lights. The pressure and danger must become tremendous, it must be a question of life and death, before our cold reason, our conventional language, and our fear of committing ourselves, will give way to the unmistakable and unique sounds of truth.

•

The secret of the due process of revolution is a progressive change in vocabulary.

Only poisons become addictive

There is a story going the rounds which will appeal to all those who like to think that everything always turns out for the best in the end. It is to do with those rats which are becoming resistant to the traditional rat poison, Warfarin. The poison works on ordinary rats, by preventing their blood from coagulating, and they bleed to death internally. The new breed of super-rat has modified blood characteristics that enable it to coagulate despite a dose of Warfarin. Now it seems that super-rats may be eating Warfarin to stay alive. Their blood is so prone to coagulation that a regular dose of Warfarin is needed to prevent clotting. If this proves to be true in the long term, the solution to the super-rat will be simple and cheap — just withdraw Warfarin from the rat population by putting no more of it down as poison, and the super-rats will die off like flies from coronaries.

From New Scientist, *2 Oct. '75.*

Evolution-Completion Idea

Conceptual artist Donald Burgy completed it in December '73, it appeared in **Artforum** *in '74 (minus paragraphs 6 and 7), and Robert Horvitz sent it to us. I agree with Horvitz: the mere stating of the question in those terms puts a kind of pressure on us from the universe or on the universe from us.*

—SB

EVOLUTION-COMPLETION IDEA

Each of the following sequences is an evolution. Complete each sequence according to the rules of change by which each example becomes the next.

1. transportation

   A. walk B. ride C. fly D. _____

2. economics

   A. hunt gather B. pasturage farm C. industry commerce services D. _____

3. abstraction

   A. words numbers B. calendars maps C. periodic table unified field theory D. _____

4. information media

   A. stone tablet carved bone B. ink/paper paint/canvas C. global TV telephone network D. _____

5. self-orientation in universe

   A. egocentric B. lococentric C. geocentric D. heliocentric E. _____

6. social organization

   A. individual B. family tribe C. city nation D. empire united nations E. _____

7. self-reproduction

   A. asexual replication of whole (single cell) B. whole from part regeneration (annalids) C. single organ regeneration (crustacea) D. muscle nerve regeneration (mammals, man) E. _____

8. matter complexity in universe

   A. astronomical B. geological C. chemical D. biological E. _____

Burgy

Box 428, Sausalito, California 94965

On Observing Natural Systems

FRANCISCO VARELA IN CONVERSATION WITH DONNA JOHNSON

Donna Johnson: Many people, almost as a matter of principle, of knowing what they're doing, make an effort to think "holistically," in terms of whole systems. But many of us often face a confusion stemming from our knowledge that "you can't consider a rabbit without considering his forest." We don't quite know how to go about considering the rabbit without fading into the forest, the local ecology, the planet, etc., and quickly into Everything. We know too that "the whole is more than the sum of its parts," but please Francisco what is a whole?

Francisco Varela: Well, yes, wholes, or whole systems, are arranged like Chinese boxes. One whole contains another whole and every whole is contained in another whole. There's a recursion principle there. But that does not mean that you cannot stop your unwinding at some point and consider a system.

And I have come to the conviction that the key to understanding the holism of such systems, the whole-ness of systems, is to understand that they are organized, their parts are organized, in a circular form. That is, every part interacts with every other part. That gives us a total self-referential system.

And of course the analysis of the parts does not account for the emergent properties when these parts are put together.

There has not been a lot of clear, disciplined thinking about wholes. We have a hell of a lot of technology, and ideas, and mathematics, about control of systems, that is, how to design them and how to get them to do whatever you want them to do. That is one step toward talking about systems in general regardless of their specific parts, that is, a proper system theory. But there hasn't been a lot of thinking, as a matter of fact very little thinking, on emerging properties of whole systems, natural systems.

Johnson: So how do you identify the circle that defines your system?

Varela: By the boundaries you put into the system. You say, this is the system I'm going to consider, this dog, or this society. To be sure, there are many ways of splitting up the world into different wholes, but once the criteria for separating one system from the other are given, you have a stable description.

So if you're interested in ecology, a certain kind of ecology, you split up the world in a certain way. If you're interested in economy, you split up the world in a different way. But given a criteria of distinction, you always come up with systems that have some sort of closure of their organization. And if you're a biologist, that's pretty clear, right? In the subject matter of the biologists, every one of the interactions in any organism interacts with every other interaction in a very closed fashion, a closed network of interactions.

Four laws of ecology: "(1) everything is connected to everything else; (2) everything must go somewhere; (3) nature knows best; and (4) there is no such thing as a free lunch."

Barry Commoner in *The Closing Circle*, A. Knopf, New York, 1971, p. 18.

Francisco Varela is a mathematician and neurologist whose special interest is the logic of self-reference. This sounds abstruse, but I share the opinion of Ludwig Wittgenstein, Gregory Bateson, G. Spencer Brown, Heinz von Foerster and others that failure to understand self-reference is the poison in the brain of most Western misbehavior, public and personal.

In his recent landmark paper, "A Calculus of Self-Reference" and in this interview, Francisco is helping build what Von Foerster calls "a cybernetics of observing-systems," which is the rest of the story after "the cybernetics of observed-systems" – feedback, goal-seeking, and such.

After several years with Von Foerster's Biological Computer Laboratory at the University of Illinois in Urbana, Varela is now teaching and doing research at the University of Colorado, Denver. Donna Johnson, 28, is an intellectual nomad who goes around making people's ideas clearer.

–SB

The fact that wholes have this closed organization implies that in order to describe them we have to deal with self-referential descriptions. You wind up with functions that are functions of themselves, or interactions that interact with themselves, properties that compute themselves, and so on. This has a very weird flavor for most people, because the tradition in the scientific discourse has been that this is not something we can consider. The main trend has been to put it completely aside; anything that is self-referential is a "vicious circle." It was even called a vicious circle by Saint Thomas of Aquinas.

Johnson: We're all vicious circles.

Varela: Yes, but we were forbidden to deal with that in all its formal precision by the Russell-Whitehead Theory of Types, which requires us to completely break up any circularity by establishing a hierarchical form. This is the convention which is predominant, in classical science and therefore in system theory. It's hierarchical; you have input – system – output. You have the beginning and the end, and the beginning is the beginning and the end is the end; there is no confusion between the two. But if you are to really look at wholes, you can't do that. You have to look at the beginning and the end as a circle. So you cannot deal with them hierarchically, you have to look at them as self-referential situations.

Johnson: So studying the organization of a whole system is studying the nature of its self-reference?

Varela: That's it. That is, the kind of self-referential organization that has provided the stable properties that it shows. And this is what gives the system its nature. When you have a closed interaction of chemical productions, you can have a cell, and not before that. When you have a closed interaction of descriptions, you can have self-consciousness, and not before. When you have a closed interaction of species, you have an ecological system, and not before. That is, the closure, the self-referential-ness, seem to be the hinges upon which the emergent properties of a system turn.

Johnson: Are we dealing here with natural systems exclusively, or also with designed things?

Varela: Designed systems can be looked at as closed systems, but most designed systems can be understood in a hierarchical analysis, because they are designed to have a purpose. But how can you do that with, say, a dog? The dog has an organization which manifests itself in a certain behavior which arises from its organization – but it's not designed to have a purpose for it.

> *Taciturn systems are those for which the observer asserts or discovers the goal (purpose* in*), which is thereafter equated with the purpose* for *the system in question. In contrast, language oriented systems can be asked or instructed to* adopt *goals by anyone who knows the object language and they may state and describe their own goals, using the same medium; in a very real sense these are "general purpose" systems.*
>
> Gordon Pask in "The Meaning of Cybernetics in the Behavioral Sciences," *Progress in Cybernetics*, vol. 1, Gordon Breach, New York, 1969, p. 25.

We should remark that when we talk about natural systems, in no way do we imply that a man-made or designed system is "unnatural." That is, the word "natural" here is functioning in an ambiguous sense. Every man-made system

Francisco Varela and his daughter

is of course also natural, in the sense that whatever we humans do belongs to the same natural order as what birds do. The connotation of "natural" here, then, as in "natural system," is only one of non-design, in contradistinction to manmade or designed.

Johnson: So any system can be looked at in terms of its closure. . . .

Varela: As a matter of fact a system is stable because of its closure of organization, that's the source of its stability. Now this was already identified by Wiener, by his central concept of feedback. The notion of feedback is a self-referential one, but it was seized by the engineers who made it appear hierarchical. They apply a reference signal, identify input and output, and the output affects the input with a little delay. So the self-reference becomes hidden underneath, because of the trick of dealing with it in time.

But time, that trick of dealing with in in time, can work only at a very concrete or numerical level of description. As soon as you abstract properties a little bit more, for instance in a situation where you don't have access to a time delay, you are stuck with a self-reference language. And the structure itself is of course timeless, the computation of the structure is timeless, so it's a self-referential organization.

Johnson: Do you think it's an obvious point that all whole systems are self-referential?

Varela: I think it's obvious once we see it. It's not obvious in general because the history of modern Western thinking has pressed upon us the convention of putting self-reference in a cognitive blind spot.

But everybody intuitively understands mutual interactions in a whole system. If I try to understand how my brain interacts with my liver, I know right away that it is not that my brain acts on my liver in hierarchical form but that my liver also acts on my brain, in a simultaneous fashion.

Unless you confront the mutualness, the closure, of a system, you just lose the system. It is the simultaneity of interactions that gives whole systems the flavor of being what they are.

[more →]

So I agree with you that it's not obvious, but it's not something that can be demonstrated. It's like, when people say, "Hey! We've discovered that we have an environment." Of course, everybody has an environment, yet it was a discovery fifteen years ago.

And some of the most interesting examples are those which have not been obvious at all. For instance the understanding of our nervous system, not as an input-output information processing device as is the current understanding in neurophysiology, but rather as a closed unit of perception and action to maintain internally generated reference levels.

> *A cognitive system is a system whose organization defines a domain of interactions in which it can act with relevance to the maintenance of the system itself, and the process of cognition is the actual (inductive) acting (or behaving) in this domain. Living systems are cognitive systems, and living, as a process, is a process of cognition. This statement is valid for all organisms, with and without a nervous system.*
>
> Humberto Maturana in "Neurophysiology of Cognition," *Cognition: a multiple view*. Spartan Books, New York, 1969, pp. 7-8.

In other words, the idea is that the organism's stability produces certain levels to be maintained, and all the nervous system does is to maintain those internally generated levels in the face of perturbations. So behavior becomes the compensation for those perturbations. This was first proposed by H. Maturana,[1] and followed by W. Powers[2] in his book **Behavior: The Control of Perception**. "Perception" in this context means the organism's view of whatever impinges on it. And his view is precisely dependent upon the reference

> *The fundamental anatomical and functional organization of the nervous system is basically uniform: the same functions and operations (excitation, inhibition, lateral interaction, recursive inhibition, etc.) are performed in its various parts, although in different contexts and integrated in a different manner. A partial destruction of the nervous system does not alter this basic uniformity and, although the parts left untouched cannot do the same things that the whole does, they appear in their mode of operation identical to the untouched whole. To the observer, once the boundary of the sensors is passed, the nervous system, as a mode of organization, seems to begin at any arbitrary point that he may choose to consider: the answer to the question "What is an input to the nervous system?" depends entirely on the chosen point of observation.*
>
> Humberto Maturana in "Neurophysiology of Cognition," *Cognition: a multiple view*, Spartan Books, New York, 1969, p. 13.

levels he is set up to maintain, rather than on an externally defined "stimulus" that is to be "processed," as defined by an external agent. Of course "perturbations" can be external or arise internally from the organism itself.

Now, "compensation" and "perturbation" are very different things from "input" and "output," although they might work in a similar way. "Input" and "output" carry the connotation of being something arising in the design of a system. When I put my coin into the Coke machine, I know that it is designed to receive that input, and no other input. But if I call my dog "Fido" and he comes to me, it's not because he was designed for me to call him "Fido" or anything else. He wasn't designed; he just does his thing. The basic difference between input-output and perturbation-compensation is that one puts emphasis on the design of a thing, and the other puts emphasis on the stability arising from the closure of its organization.

The other example of the expansion of our understanding of whole systems is that of a dialogue, or even more concretely the situation where there is a teacher and a taught. Both have to learn simultaneously, one to teach, the other to learn. This has been described in great detail in Gordon Pask's theory of the p-individual.[3] We could go on with interesting examples; interpersonal relations (Laing),[4] world models,[5] management (Beer),[6] communication (Bateson),[7] economics (Boulding)[8] and so on.

Now, a word of caution here. We are not saying that such systems are closed for interactions. This is a point where there is much semantic confusion; when you say that a

> *In this discussion, questions of energy play almost no part – the energy is simply taken for granted . . . Cybernetics might, in fact, be defined as the study of systems that are open to energy but closed to information and control – systems that are "information tight."*
>
> V. Ross Ashby in *Introduction to Cybernetics*, Chapman and Hall, London, 1955, p. 5.

natural system has organizational closure, people think that you mean closed for interactions. Nothing of the sort, though this is the common meaning. This connects to your original question; no system is closed for interactions, that is, it is not closed for matter and energy. But it can be organizationally closed, as was said by Ashby many years ago.

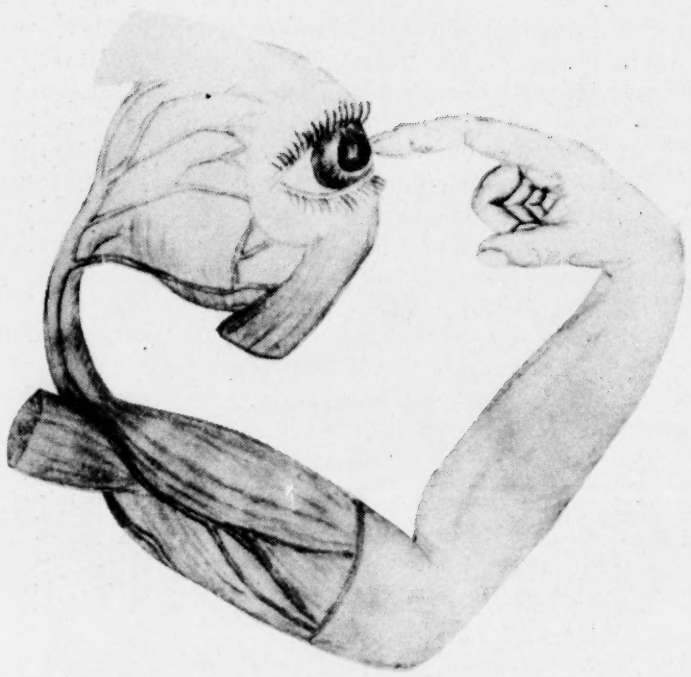
Johnson: Closed for computation.

Varela: Yes, closed for computation or information. And if you take this seriously, that it's closed for information, then you see that its structure has to be made up of self-referential interactions. Circular interactions, where there is no linearity, where like in the feedback loop there is no meaning in establishing cause and effect, because the cause and effect are mixed together.

Johnson: I'm trying to understand what the observer has to do with the closure. I ask myself the false question, is it a property of me or a property of the system?

Varela: Well, it's both. It's a property of their coupling. What you do with the closure of a system is actually what we do all the time, i.e., we interact with a system by poking at it, throwing things at it, and shouting at it and doing things like that, in various degrees of sophistication. That is a perturbation on the stability of the system, which it will compensate or will not compensate (and hence disintegrate). If it does compensate then we sense in it a stability for that interaction. So if each time I say "Fido" my dog comes around, that "Fido" is a perturbation in its organization that produces a compensation, i.e., the locomotion of coming to me. That is how it is with all systems. Now it is system-dependent in that its behavior will depend upon its organization. It is observer-dependent upon the kind of perturbation that I throw at it, which depends on me. Therefore my ability to see what its properties are is limited by what kinds of interactions I can have with it. So it's both.

Johnson: Then you should know just what you did to it, as much as you can.



Varela: Yes, as much as you can. And the larger the domain of interactions you can have with a system, the more you get to know the system. The ultimate of that is of course a very close person, or a very well-known society, where you know what kinds of compensations will arise from certain interactions.

More formally, once you know the laws of a closure, rather than attempting to make a stimulus-response analysis, you can predict the compensation for any perturbation.

Johnson: So we're back at the beginning, at a self-referential system preserving itself.

Varela: Yes, and I think that here we can summarize the three key points we've been discussing by stopping for a moment and thinking about, just what is the meaning of "wholeness?" This relates to two key processes. One is the process of recognizing the stable properties of wholes, by interacting with them. The other is the recognition that the stability we see arises from the self-referential, mutual, reciprocal interactions that constitute the system. Thus, the three notions I mentioned are distinction, stability and closure, and are really one and the same.

We recognize wholes because they have certain stable properties, and the stable properties arise from the closure of the organization, and the closure of the organization is the key to the appearance of new properties, which is the characteristic of a whole that has the new emergent properties. In summary, I would say something like "the whole is more than the sum of its parts, it is the organizational closure of its parts."

Johnson: Okay, what does all this have to do with G. Spencer Brown and his **Laws of Form**,[9] and your work on the logic of self-reference?

Varela: Well, the fact is that in Western thought, self-reference has been completely put aside. So in the kinds of descriptive apparatuses we are accustomed to for precise descriptions, that is the logic and mathematics that have been available to us for describing the world, self-reference has been completely out except in a very crude form involving time delays, or recursive expressions. These are adequate for things like computers and control systems, but they don't give us the full flavor of the closed organizational structure, which stays hidden underneath as it were.

Now, an entirely new, fresh beginning for that was provided by G. Spencer Brown in his **Laws of Form** *[CATALOG, p. 12]*. Brown is an important key to what we're discussing, because

By tracing the way we represent a severance, we can begin to reconstruct, with an accuracy and coverage that appear almost uncanny, the basic forms underlying linguistic, mathematical, physical, and biological science, and can begin to see how the familiar laws of our own experience follow inexorably from the original act of severance. The act is itself already remembered, even if unconsciously, as our first attempt to distinguish different things in a world where, in the first place, the boundaries can be drawn anywhere we please. At this stage the universe cannot be distinguished from how we act upon it, and the world may seem like shifting sand beneath our feet.

Although all forms, and thus all universes, are possible, and any particular form is mutable, it becomes evident that the laws relating such forms are the same in any universe. It is this sameness, the idea that we can find a reality which is independent of how the universe actually appears, that lends such fascination to the study of mathematics. That mathematics, in common with other art forms, can lead us beyond ordinary existence, and can show us something of the structure in which all creation hangs together, is no new idea. But mathematical texts generally begin the story somewhere in the middle, leaving the reader to pick up the thread as best he can. Here the story is traced from the beginning.

G. Spencer Brown in *Laws of Form*, George Allen & Unwin, London, 1969, p. v.

he shows that the action of indication, of distinguishing something, is really what is happening at the basis of any description of any universe. Distinguishing or not distinguishing, as he proves, is much more general, more fundamental, than true or false. True-False is just one particular case of the general act of distinguishing.

Thus the notion of indication is the domain which he explores, the indication of forms, the most bare outline of anything we can describe. Brown strips systems down to their bare bones, which is just the pure indicational forms. Reading his book cannot be replaced by any summary we could do here.

Johnson: Enter the observer, with trumpets.

Varela: Yes, this does bring out the full importance of introducing the observer into the observation. That is, whatever we purposely distinguish will reveal not only the properties we are looking at but the fact that we are doing these interactions out of our own properties, that is, the properties we discover in systems will depend upon our own properties.

In its purest form, that means that whatever description we do of the world will be based on the act of splitting it apart in different ways. And the way we see the world, therefore, reveals what is our choice of cleavage, as it were, and that there are many of them precisely because there are many observers.

Spencer Brown shows that, in the most precise mathematical sense, every description can be based, including logic of course, on the act of distinction. The calculus of these distinctions is what is contained in his book. He develops a calculus related to these forms of indication. So our ideas about systems and their stability have a very natural foundation in Brown's profound insights, and in his formalism.

It is from his grounds that a different view about self-reference can be developed. For, in its purest indicational form, self-reference appears as forms that in-form themselves. This may sound just poetic but it isn't. It also

can be represented as very well-defined mathematical expression. And lo and behold! Once you start fiddling around with these re-entering, self-informing expressions, you find that an entirely new extension of Brown's initial ground is necessary.

It is something like this in an analogy to the numerical domain: suppose you start with an initial ground composed just of the integers (i.e., 1, 2, 3, . . .). Then you fiddle around with them, making more and more complex expressions. At a point, new kinds of numbers will emerge, real numbers (something like *pi* or √2). Thus it becomes necessary to extend the initial ground on which we started.

In the domain of indications, of course, numbers do not exist yet. This domain precedes their appearance. But a similar situation arises: as soon as self-reference is introduced, the ground has to be expanded considerably. And this says, to me, that in its most basic forms, self-reference is a very unique domain, that cannot be trapped into non-self-referential grounds. Which we knew all along, but didn't want to acknowledge. So this is what my own work[10] has been concerned with, exploring this brownian foundation for a general theory of systems where closure and self-reference takes the place it deserves. It is a very beautiful subject, and there is lots to do.

Now, for me, one of the most attractive features of this approach, this brownian view, is that it combines in one conceptual stroke the act of seeing systems (i.e., some universe)

> *Thus we cannot escape the fact that the world we know is constructed in order (and thus in such a way as to be able) to see itself.*
>
> *This is indeed amazing.*
>
> *Not so much in view of what it sees, although this may appear fantastic enough, but in respect of the fact that it* can *see* at all.
>
> *But* in order *to do so, evidently it must first cut itself up into at least one state which sees, and at least one other state which is seen. In this severed and mutilated condition, whatever it sees is* only partially *itself. We may take it that the world undoubtedly is itself (i.e., is indistinct from itself), but, in any attempt to see itself as an object, it must, equally undoubtedly, act so as to make itself distinct from, and therefore false to, itself. In this condition it will always partially elude itself . . .*
>
> *We see now that the first distinction, the mark, and the observer are not only interchangeable, but, in the form, identical.*
>
> G. Spencer Brown in *Laws of Form*, George Allen & Unwin, London, 1969, p. 105, p. 76.

and he who does the seeing, so that the formal ground fits hand in glove with our previous point about the observer, the interlocking between what is seen and who sees it.

Johnson: It's interesting how this also fits into the many spiritual traditions that say that the only way to know what you're doing is to know yourself, as much as you can, to know what is knowing. That entails a frightening responsibility, if you have those sensibilities. I wonder about the question of people "becoming more objective" as many say, by ridding themselves of, or at least recognizing, their ego trips, their preconceptions, false beliefs, etc. Is there a way to talk about these things in Spencer Brown's language, perhaps more clearly than in the previous languages?

Varela: I have two related points to make here, which I feel very strongly about. One, I would reformulate what you just said about this "objective" business. When you realize that whatever you see reflects your properties, instead of putting so much intent, so much energy, investing so much, in a particular content, you turn back and focus on your capacity to do such a thing as a distinction. So the capacity to compute a reality becomes much more interesting than the content of the reality. Not so much intent, thus, on the something, but on the process of doing what we do to arrive at the something.

It seems to me that what is properly human, our responsibility (and John Lilly would say the next stage of evolution), is to have a hold on these laws of cognition and reality, rather than on any specific, particular realities.

The West has always been sold on a certain, particular way of doing things. What an understanding of what we have talked about today would bring about, is a recognition that the more we know about these things, the more we know about how to compute any universe whatsoever. So the more "objective" we would be in the sense that we would know what the contents of any universe would really mean.

This is what von Foerster has called the "cybernetics of second order,"[11] i.e., not the cybernetics of observed systems, but the cybernetics of observing systems. I think this is quite central. It's really the same theme that from the cognitive point of view Bateson[7] and Lilly[12] and von Foerster[13] and Spencer Brown[9] and Joseph Chilton Pearce[14] and John Brockman[15] and Ornstein[16] are addressing, which fits hand-in-hand with the traditional spiritual techniques, but seems to me the more Western way of embodying it, rather than the more disembodied kinds of spirituality.

The second point in relation to your question is that once you realize the full cognitive impact of these ideas, which I don't think we really have, you begin to understand that your participation in this reality has a limit, i.e., that you're a part of it, and you cannot possibly hope to comprise the whole of it. The establishing of the limits of our actions as a result of our epistemological understanding, seems to be very fruitful in the light of world models, urban growth,

population, and all of these current human problems that find their solution in a limit.

But it cannot be a limit imposed from the outside, as Ivan Illich[17] has said so clearly about, say, medicine, law and transportation. None of these limits can be arrived at by arbitrary decision, nor by myth, as it used to be, but must arise from an understanding that these limitations can be seen with the utmost precision. We can understand that we have a limited capacity to comprehend what is happening at any given moment, and we can therefore limit our actions with respect to the reality we are confronting. This is opposed to the current idea of precision, that an action, when it is faulty or wrong, can be corrected by more complex technological or scientific improvement along the same lines on which the fault was discovered.

So the two things go side by side, the intrinsic limitation, which is a self-referential kind of limitation, and the understanding of the importance of focussing on the nature of our capacity to invent realities, rather than on their specific content.

Johnson: We are then faced with the self-consciousness of seeing ourselves seeing the world, and the other-consciousness which sees its limits in the knowledge that each of us is constructing a reality for himself.

Varela: Yes, and this takes us far, because it leads us to a meta-understanding of humanity. If everybody would agree that their current reality is a reality, and that what we essentially share is our capacity for constructing a reality, then perhaps we could agree on a meta-agreement for computing a reality that would mean survival and dignity for everybody on the planet, rather than each group being sold on a particular way of doing things.

Thus self-reference is, for me, the nerve of this logic of paradise, that is, the possibility of a common survival with dignity of humankind.

That paradise is something very concrete, founded on the logic of self-reference, on seeing that what we do is a reflection of what we are. This is the other aspect of my interest in having a full grasp of what self-referential descriptions are, how we can make them approachable, handleable, meaningful.

Johnson: Even the simplest levels of that haven't been done, say in places like medicine, where it seems generally not to occur to people to ask "What else happens when you push this button," when you administer this antibiotic? What happens besides killing off certain bacteria? How does the organism compensate? Even this is not done, let alone the kind of paradigm switch that is going to be necessary if your paradise is to come about.

Varela: Well, either it comes about or we're done for. The transition of paradigm here, is from a classic one — the observer shall not enter into the description — to, how shall I call it, a communal one — the description shall reveal the properties of the observer.[13] The essential flavor of descriptions of the world in the classic paradigm is hierarchical; and this reminds us a lot of our hierarchically organized corporate society. In the hopefully coming paradigm a central feature of any description is the acknowledgement that everything affects everything else, and reflects everything else; it is much more like a communal structure.

Well, we're being awfully loose and general, but all these things do relate. It is amazing, that systems theory in the sense used here; mathematics in the brownian sense; proper understanding of the nervous system and cognition; and human issues such as exploring the nature of consciousness and of institutional overgrowth — all these things do come together into a common understanding. That's a lot of ground, but there it is.

Johnson: And the moral of the story . . .

Varela: The moral of the story is, we have to have this understanding. But whether this survival with dignity comes about or not, is not only a matter of ideas. It also implies a hell of a lot of other things. It's not just a matter of knowing it, we also have to live up to it. We have to have the being adequate to the understanding, and this is not arrived at by intellectual means. Self-reference applies here as well: to understand the whole of us and the world, we have to participate with the whole of us. Specially, the bringing together of verbal and non-verbal forms of knowledge, rational and intuitive, is necessary.

Without understanding, it would not be possible, but we have to guard against settling for intellection only. ■

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For God's Sake, Margaret

CONVERSATION WITH GREGORY BATESON AND MARGARET MEAD

Stewart Brand: I need a little background, if it's all right, on how this whole Macy thing got rolling, why, and when, and what the sequence was.

Gregory Bateson: There was this Macy meeting in what, '42?[1]

SB: Who started it, and what was it about?

Bateson: This was a meeting called "Cerebral Inhibition," which in fact was a meeting on hypnosis.* "Cerebral inhibition" was a respectable word for hypnosis. Most of what was said about "feedback" was said over lunch.

Mead: Well, I know that's what you always tell people, but I didn't sit at the same place at lunch, and I heard what was said at that conference. But at that conference, which is the one where Milton Erickson hypnotized that Yale psychologist, it was at the end of that conference that you really had the design of what needed to be done. And then you were caught up in war work and went overseas and there was that long period.

I think that you actually have to go back to that earlier meeting that was held in the basement of the old Psycho-Analytic building on the West Side the day of Pearl Harbor.

*The twenty participants included representatives of anthropology, psychobiology, physiology, psychiatry, neurology, psychology, medicine, anatomy, and electronics. Among those present were Gregory Bateson, Lawrence K. Frank, Frank Fremont-Smith, Lawrence Kubie, Warren McCulloch, Margaret Mead, Arthur Rosenblueth.

Bateson: They didn't on-go from year to year, those early ones. Larry Frank was chairman I bet.

Mead: No, Larry never was chairman, you know. He always sat on the sidelines and made somebody else be chairman. Kubie was a very important person at that point.

Bateson: Yes. Kubie was an important bridge because Kubie had respectable-ized Milton. There's a whole series of papers which are jointly Kubie and Erickson. Now, in fact, they were Erickson's papers.

Mead: And Kubie didn't know what was in them. That's the truth.

Bateson: But Kubie did get right the energy problem. He was the first person that really took Freud's "energy" and said, "Look, look, look, it makes no sense." There is a very good paper by Kubie on the errors of Freudian energy theory. *[Goes to find the reference.]* Huh. Kubie, "Fallacious Use of Quantitative Concepts in Dynamic Psychology."

Mead: Now when was that?

Bateson: That was . . . guess.

Mead: No, I don't guess that one.

Bateson: Published in '47. **Psychoanalytic Quarterly**. For which I suspect he very nearly got read out of the church. He never said it again.

Margaret Mead and Gregory Bateson were married in 1936. They had met and fallen in love in 1932 while both were doing anthropological fieldwork on the Sepik River in New Guinea (Margaret was at the time with her second husband, Reo Fortune). In New Guinea Gregory's unusual sense of theory met Margaret's improved field methodology and sparked much of the quality in Gregory's opus on the Iatmul tribe, **Naven**.

Newly-wed in Bali, they spent two collaborative years in the most intense and productive fieldwork of their lives, developing, among other things, a still unmatched photographic analysis of the culture.

Their daughter Mary Catherine, Margaret's only child, was born in 1939 in the United States. Gregory and Margaret worked together on the result of their Bali fieldwork, **Balinese Character – A Photographic Analysis**, *and then were separated increasingly by World War II and their own diverging interests.*

After the war they both were involved in starting the somewhat famous Macy Conferences (1947-53) that invented cybernetics. This interview begins with their joint recollection of that critical period.

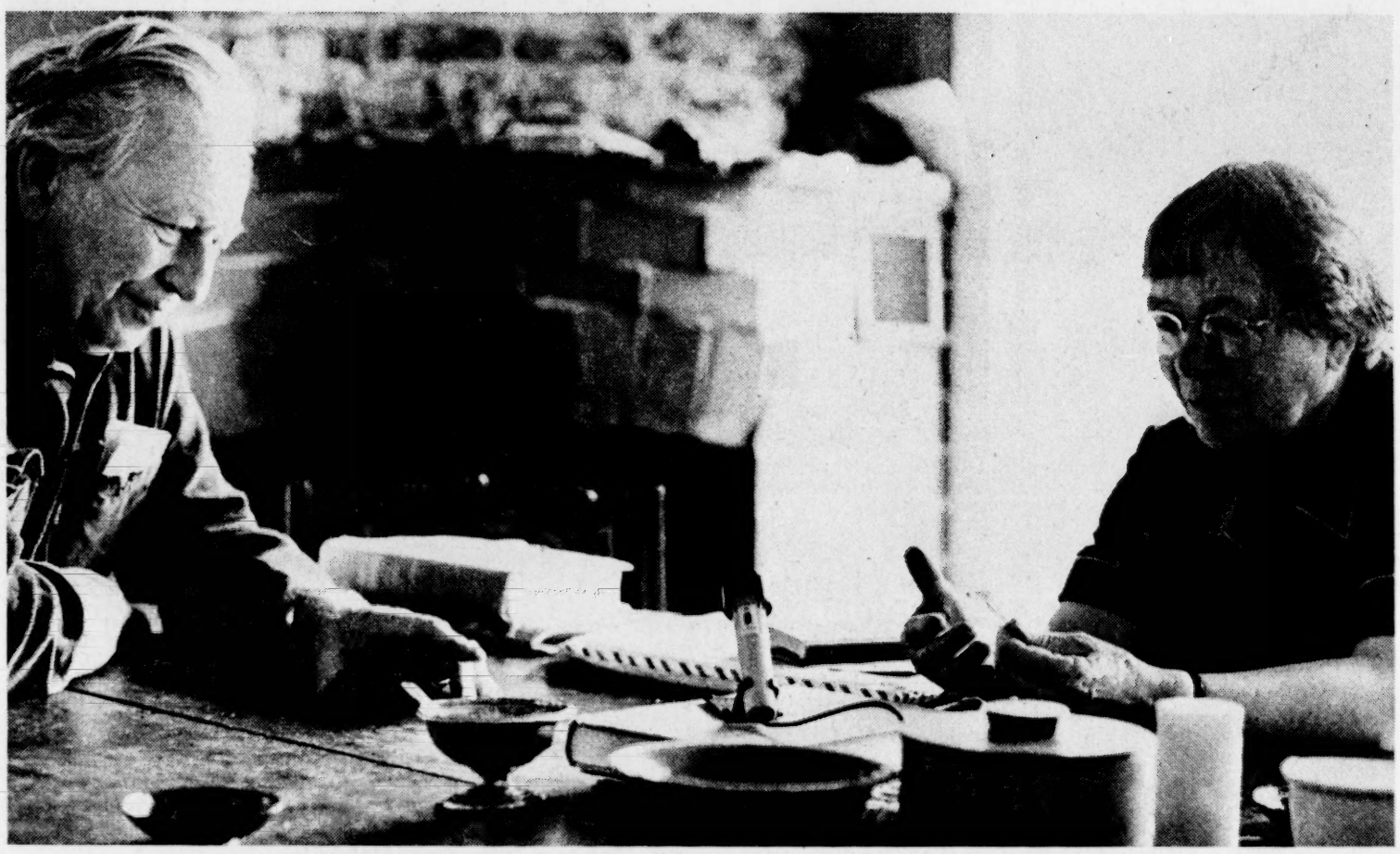
Margaret Mead is one of the world's most remarkable women. She got a full mixture of praise and notoriety (notorious in that day because women weren't supposed to talk about sex) with her first book, **Coming of Age in Samoa** *(1928). Since then there have been ten other books and numerous honors and positions, including President of the American Anthropological Association (1960), and of Scientists' Institute on Public Information, and (this year) the American Association for the Advancement of Science, and a Curator of the American Museum of Natural History, which continues as her headquarters. In public affairs she seems to have taken over the Eleanor Roosevelt niche.*

After Bali and the Macy Conferences Gregory Bateson went on to work with schizophrenics, alcoholics, artists, dolphins, students, and a steadily more general set of understandings of what they have in common. He co-authored a book, **Communication: The Social Matrix of Psychiatry** *(1951-68, Norton), with Jurgen Ruesch, and edited* **Perceval's Narrative – A Patient's Account of his Psychosis, 1830-1832** *(1961, Stanford). Mary Catherine, his and Margaret's daughter, wrote a book about one of Gregory's conferences,* **Our Own Metaphor** *(1972, Knopf). His collected papers appear in* **Steps to an Ecology of Mind** *(1972, Ballantine), a book that wowed me out of my shoes. If Gregory lives long enough he will get his Nobel for the Double Bind Theory of Schizophrenia.*

Margaret is now 75, Gregory 72. They meet seldom though always affectionately. Gregory has a son John, 23, by his second wife, and a daughter Nora, 9, by Lois Bateson his present wife.

This meeting with Margaret took place at Gregory's home near Santa Cruz, California, in March of this year.

–SB



Brand

Gregory, Margaret, and a microphone at the Bateson home near Santa Cruz this spring.

Mead: It was very hard to read Kubie out of the church because he had once been a neurologist, and that was the thing that they were all scared of. Now, where is the Rosenblueth, Wiener and Bigelow paper? The first great paper on cybernetics.**

Bateson: Rosenblueth, Wiener and Bigelow. "Behavior, Purpose and Teleology," **Philosophy of Science**, 1943.[2]

Mead: That's it, you see.

Bateson: It could just have been published at the time of the Cerebral Inhibition conference.

Mead: It was just coming out or just had come out.

SB: What was the experiment that that paper recorded?

Bateson: It didn't record an experiment, it reported on the formal character of seeking mechanisms, essentially. Self-corrective mechanisms such as missiles. The missile measures the angle between its direction and the target it's seeking, and uses that measure to correct itself.

Mead: But using some very simple physiological experiments that Rosenblueth had been doing at the University of Mexico.

SB: Do you recall what they were saying that you overheard that got you excited?

Bateson: It was a solution to the problem of purpose. From Aristotle on, the final cause has always been the mystery. This came out then. We didn't realize then (at least I didn't realize it, though McCulloch might have) that the whole of logic would have to be reconstructed for recursiveness. When I came in from overseas in '45 I went within the first two or three days to Frank Fremont-Smith, and said, "Let's have a Macy Conference on that stuff."

Mead: You and Warren McCulloch had an exchange of letters when you were in Ceylon.

Bateson: We did?

****I am told a paper by W. Ross Ashby predated this by a year but we didn't know it. —Mead**

Mead: Yes. You told me enough about it in some way. I talked to Fremont-Smith. McCulloch had talked to Fremont-Smith.

Bateson: Fremont-Smith told me, "Yes, we've just arranged to have one, McCulloch is the chairman, go talk to McCulloch."

Mead: And McCulloch had a grand design in his mind. He got people into that conference, who he then kept from talking.

Bateson: Yes, he had a design on how the shape of the conversation would run over five years – what had to be said before what else could be said.

Mead: He wouldn't let Ralph Gerard talk. He said, "You can talk next year." He was very autocratic.

Bateson: Yes, but an awfully good chairman in many ways. It's very rare to have a chairman who knows what it's about at all.

SB: What was his grand design?

Bateson: Who knows?

Mead: Well, I think more or less what happened was.

Bateson: How did the first meeting differ from the second meeting?

Mead: There wasn't even any usable terminology. At first we called the thing "feedback," and the models that we were presented with at that point were the guided missile, target-seeking. Now there had been another even that's worth considering here. That is that Wiener had written an article in the **Atlantic**, or **Harper's**, refusing to give the war department data on guided missiles. Remember that?

Bateson: Oh yes.

Mead: He'd worked on them all through the war, and of course they had the material if they had hunted for it, but they made the mistake of asking him for some, and at that point he said that he would not give it to them, the war was over, and this was data that could only be used for war-like purposes. He would not give it to them.

[more →]

1952, one of the later Macy Conferences on cybernetics. From foreground clockwise: Larry Kubie, Larry Frank, T.C. Schneirla, H.L. Teuber, Walter Pitts, Gerhard von Bonin, Frank Fremont-Smith, Warren McCulloch (beard), W. Grey Walter, Henry Quastler, Heinz Von Foerster, John Bowman.

Bateson: That's right, it was the **Atlantic**.

Mead: They were talking almost entirely of negative feedback. By this time, Wiener and Bigelow and Johnny Von Neumann of course, were members of the group, and Rosenblueth, Kurt Lewin, Molly Harrower, Evelyn Hutchinson, Leonard Savage, Henry Brosin and that Hungarian who always knew who was sleeping with who and it was the only thing he was interested in, I've forgotten his name. Well, the lists survive all right.

There were three groups of people. There were the mathematicians and physicists – people trained in the physical sciences, who were very, very precise in what they wanted to think about. There was a small group of us, anthropologists and psychiatrists, who were trained to know enough about psychology in groups so we knew what was happening, could use it, and disallow it. And then there were two or three gossips in the middle, who were simply people who had a lot of loose intuition and no discipline to what they were doing. In a sense it was the most interesting conference I've ever been in, because nobody knew how to manage these things yet.

SB: So you had one group of people that was on to another group on a level they were not used to.

Mead: Yes, and shifting back and forth between these levels and keeping everything straight was very interesting. So we used the model, "feedback," and Kurt Lewin – who didn't understand any known language, but always had to reduce them to concepts – he went away with the idea of feedback as something that when you did anything with a group you went back and told them later what had happened. And he died before anything much else happened. So the word "feedback" got introduced incorrectly into the international UNESCO type conferences where it's been ever since.

Bateson: In the small group cult, feedback now means either telling people what they did, or answering.

Mead: Yes. "I don't get any feedback from you," or "I can't go on with this without some feedback." It wouldn't have survived if Kurt had lived. He would undoubtedly have got it right.

SB: I would like a little more detail back at the initial time when you knew you had hit something.

Bateson: We knew we had, well, for me, I had analyzed the Iatmul of Sepik River in **Naven**[3] and I had analyzed out the fact there were interactions which must stockpile.

SB: This was your schismogenesis?

Bateson: This is schismogenesis, yes. We named it in '36.

Mead: It hadn't been named yet. You're starting back before you named it schismogenesis.

Bateson: Well, **Naven** was published. I'm talking about the state I was in when this stuff appeared.

Mead: In '43.

Bateson: Yes. The next thing that followed that was "Generalized Foreign Policies." L.F. Richardson.[4] I went back to England in '39. Hitler had invaded Poland. Bartlett said, "You might be interested in that," throwing it across the room in contempt.

Mead: I'm glad I have another count against Bartlett, I didn't know he had contempt for Richardson.

Bateson: For Richardson and for me, you see. It was contemptible that I would be interested in the contemptible. So I ran off with that and kept it (probably it's Bartlett's copy of his files that we now have), and brought it back to this country.

SB: What was in that paper?

Bateson: This is the mathematics of armaments races. How do you build the mathematics of a system in which what I do depends upon what you do, and what you do depends upon what I do, and we get into a thing. Richardson set a limit by invoking "fatigue." He started with a simple pair of differential equations in the premise that my rate of armament could be a linear function of your strength; and vice versa. That led immediately to an exponential runaway. He added a "fatigue" factor representing the drain on your and my resources. The question then was whether the system could settle. Are we going to settle at a mutual . . . there's a word in international relations for slapping the other people's aggression back by threat. . . .

Mead: You mean deterence?

BATESON: *I don't like cameras on tripods, just grinding. The photographic record should be an art form.*

The rest of the 1952 Macy Conference. From foreground clockwise: Henry Quastler, Heinz Von Foerster, John Bowman, Gregory Bateson, G.E. Hutchinson, unidentified, Henry Brosin, Heinrich Klüver, Janet Freud, Y. Bar-Hillel (speaking), Julian Bigelow, Leonard Savage, V.E. Amassian, Margaret Mead, Y.R. Chao, F.S. Northrup, Don Marquis, Larry Kubie.

Bateson: Yes, mutual deterence. That word hadn't been invented then. Then in the appendix, he had some revised equations in terms of not what is your strength and what is my strength, but what is the difference between our strengths. He worked it out in terms of the relation of two nations where each is stimulated by the amount the other side is ahead. This was obviously symmetrical – Iatmul Sepik River schismogenesis – right?

I then wrote to him at that stage, and said, "What about the other case, where you are stimulated to aggression by the weakness of the other side?" Which is the complementary schismogenesis, right? He worked out the algebra for that, and said, "It's very unpromising. I don't recommend nations to get into that at all. The orders of instability they get into are then very serious."

SB: Because that one would accelerate the difference rather than reduce the difference?

Bateson: Accelerates the difference, yes.

SB: A large amount of this strikes me as being the war. Would cybernetics have begun without the war? Richardson's armaments race, and Wiener's missiles . . .

Bateson: Wiener without a biologist wouldn't have done it.

Mead: Wiener was working on Rosenblueth's stuff. Now Richardson is a very peculiar character. He was a Quaker school teacher of mathematics. He did all the basic work on weather prediction. It was used in World War II and he was never told how it worked, because of security. He died without knowing about it.

Bateson: Richardson was responding to World War I. As a Quaker he refused to bear arms in World War I, and he became an ambulance man. He sat in the trenches waiting for the next call for the ambulance working out the mathematics of armaments races. Because he was sure that if only this could be got straight, the whole mess wouldn't have to happen, which indeed might be true.

Mead: Now, there were some other things like this that were being talked about, and one was what was called a vicious circle. Milton Erickson had written a paper on a girl who quarreled and had headaches and got alienated from people, which led to further quarrels, and so on.

Bateson: Yes, all the positive feedback stuff was ready. And that presented the problem: why don't these systems blow their tops? And the moment they came out with negative feedback, then one was able to say why they don't blow their tops.

SB: This was a word and an idea you heard about in '43?

Bateson: That's when *negative feedback* came in.

Mead: We had things about reversals of sign . . .

Bateson: That was another story, that's before Richardson, even, and way before feedback. Already in **Naven** there is a statement that complementary schismogenesis neutralizes symmetrical, and vice-versa. If you get into too-long a contrast between the bosses and the workers (which is complementary schismogenesis), you put them all out on the cricket field and make them play cricket, which puts them in a symmetrical situation. And it doesn't matter who wins the game of cricket, you know.

SB: As long as they're in that mode . . .

Bateson: Or if they're too far in symmetrical rivalry, such as a quarreling husband and wife, when one of them sprains his ankle, in comes the complementary with dependency. They suddenly feel much better.

SB: It doesn't matter who sprains?

Bateson: It doesn't matter who sprains his ankle, of course not.

SB: So you had some notion that all of these various pathologies were structurally the same?

Bateson: No, structurally related, that there was a subject matter of inquiry defined by all these. You see the fantastic thing is that in 1856, before the publication of the **Origin of Species**, Wallace in Ternate, Indonesia, had a psychedelic spell following his malaria in which he invented the principle of natural selection. He wrote to Darwin and he said, "Look, natural selection is just like a steam engine with a governor." The first cybernetic model. But he only thought he had an illustration, he didn't think he'd really said probably the most powerful thing that'd been said in the 19th Century.

Mead: Only nobody knew it.

MEAD: *Oh why? Why shouldn't you have some records that aren't art forms?*

[more →]

Bateson: Nobody knew it. And there it is, still in the text. Nobody picked it up. Well, there was the machinery, the governor itself. There was the mathematics of the machine with the governor, which was done by Clerk Maxwell in 1868, because nobody knew how to write a blueprint for these bloody things – they would go into oscillation. Then there's Claude Bernard about 1890 with the *milieu interne* – the internal matrix of the body, control of temperature, control of sugar, and all that.[5]

SB: Which later became homeostasis?

Bateson: Which later became homeostasis in Cannon.[6] But nobody put the stuff together to say these are the formal relations which go for natural selection, which go for internal physiology, which go for purpose, which go for a cat trying to catch a mouse, which go for me picking up the salt cellar. This was really done by Wiener, and Rosenblueth and McCulloch and Bigelow. And who really put the truth through, I don't know, do you?

Mead: No. Wiener and McCulloch were first partners in this thinking, and then became rivals when McCulloch went to MIT. As long as McCulloch stayed at Illinois and Wiener at MIT they were working right together. With both of them at MIT they became totally alienated, and then Walter Pitts got involved. He was the youngest member of the group.

Bateson: Oh God, he was so clever. You'd set him a problem, you know, and he would reach up to his hair and take a couple of strands, and he would say, "Well, now, if you say that, you see, um, no then, you see," and he'd work it all out with his hair.

Mead: He was a very odd boy. Now, one of the important points at this stage was one that Gregory kept making, that a possible cross-disciplinary mathematical language was available. We never got very far with that because all you could ever get out of people like Wiener was, "You need a longer run." We used to drive them absolutely out of their minds because they were not willing to look at pattern, really. What they wanted was a terribly long run of data.

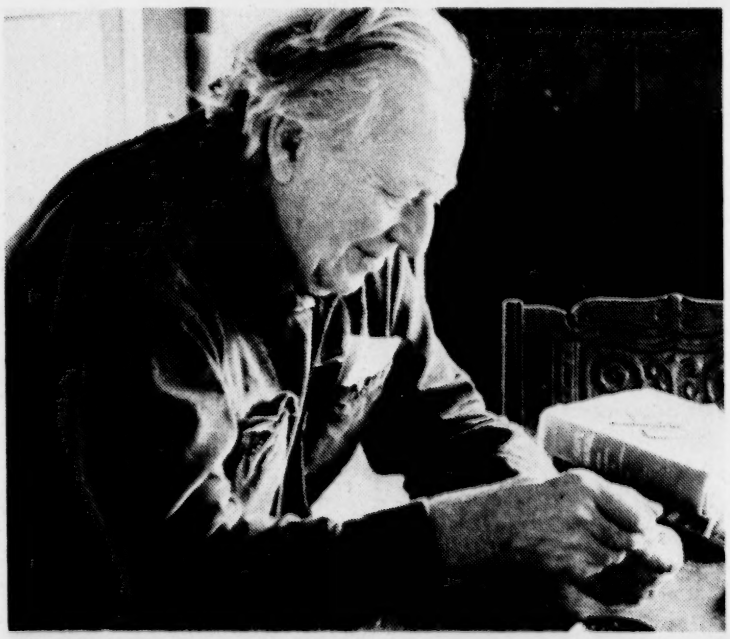
Bateson: Of quantitative data, essentially.

Mead: Quantitative data, and we never got them really to look at the problem of pattern. Von Neumann came the closest to it.

Bateson: Yes, he was in games theory, you see.

SB: How many of you were thinking you had some kind of a general solution?

Mead: Gregory thought so, and Larry Frank thought so, Evelyn Hutchinson; we had Ross Ashby over, how about Savage?



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Bateson: I don't think so, no. You see, one of the essentials, Stewart, for understanding it, was to have been brought up in the age when it wasn't there, when purpose was a total mystery. **Naven** is a disciplined book, written without teleology. The rule was you must not invoke teleology. Now, people like Savage, who was a mathematician, for one thing he never faced biological data, you see. He didn't know what a mystery it is that you have a nose between two eyes, and you don't have noses on the outside here, you know. All that sort of mystery wasn't a question for him. Now, if you say to somebody like that, "Why is the trunk of an elephant a nose?" they can't tell you without an awful sweat that it's because it's between two eyes. The formal puzzle has never been presented to them.

Mead: I remember Robert Merton saying once that there wasn't a person in the country who was thinking hard about problems who didn't have a folder somewhere marked something like "circular systems." Horney's book, **The Neurotic Personality of Our Times**[7] discusses the vicious circle, and interventions in the circle, and the effect of intervention. Milton's paper on that girl with migraine headaches and quarreling with her friends, there was lots of stuff around . . .

Bateson: On positive feedback.

Mead: But also about possible intervention.

Bateson: But the essence of the other thing is that it's not an intervention.

Mead: Yes, but intervention is a precursor of thinking of . . .

Bateson: Yes, yes. All cybernetic entities are displaced small boys.

Mead: Displaced small what?

Bateson: Boys. They're jacks. You know what a jack is? A jack is an instrument to displace a small boy. A boot jack is a thing for pulling off boots 'cause you haven't a small boy to pull it off for you.

Mead: I'll remember that next time. This is an English joke that no one will understand.

Bateson: I can't help it. On the first steam engines, you've got a pair of cylinders and you've got valves, and you pull this valve to run the steam into this one, close it, let it drive the piston, pull it – this is done by hand. Then they invented the idea of having the flywheel control the valves. This displaced a small boy.

SB: The governor displaced another one?

Bateson: And the governor displaced another small boy, who was to keep the engine going at a constant rate, that's right. Now then, the John Stroud stuff is the study of the psychology of the human being between two machines.

In any device such as an ack-ack gun you've got a whole series of small boys in the situation of being between a machine and another machine. What John Stroud worked on was the psychology of that situation. He found what I still think are some very interesting things, namely that the orders of equations (you know, equations in X, or in X^2, or X^3, or whatever) are discontinuous in the human mind, as well as being discontinuous in mathematical paper work. Where is John Stroud now, do you ever see him?

Mead: He is retired, teaching at Simon Fraser somewhat, and he's been brought back by Gerry O'Neill into discussions of space colonies.

SB: Good lord.

BATESON: *I don't know what science is. I don't know what art is.*

Mead: He was very much interested in space colonies. He told me all about them twenty-five years ago, and I was interested in all the problems then, the selection of people, and what not.

Bateson: Stewart, you should get hold of John Stroud.

Mead: Now Gerry has John Stroud's manuscript and he's not going to read it until he's finished his own. I said, "I think that's unscientific and childish."

Bateson: He wants credit for inventing anything that John Stroud had invented.

Mead: Well, he did invent it separately, that's true, and he wants to prove it, because after all, what does a physical science have in the world except priority? I don't blame them you know, because they haven't got anything else. All they're interested in is priority. They spend weeks and months discussing priority. It's so boring. Somebody mailed a letter three days before somebody else did, and they have a whole meeting about it.

SB: Margaret, what was your perception at the time of the early Macy meetings as to what was going on?

Mead: The thing that cybernetics made the most difference to me, aside from all the things that you know, in the social organization field, was the interaction between the mother and child. There had been too much emphasis that there were temperamental differences among children, so that you responded differently to a hyperactive baby than you did to a quiet baby. But the extent to which there was a system in which the mother was dependent on what the child had learned as the stimulus for the next position wasn't well articulated until we got the cybernetics conferences going.

Bateson: The link-up with the behavioral sciences spread very slowly and hasn't really spread yet. The cyberneticians in the narrow sense of the word went off into input-output.

SB: They went off into computer science.

Bateson: Computer science is input-output. You've got a box, and you've got this line enclosing the box, and the science is the science of these boxes. Now, the essence of Wiener's cybernetics was that the science is the science of the whole circuit. You see, the diagram . . .

Mead: You'd better verbalize this diagram if it's going to be on the tape.

Bateson: Well, you can carry a piece of yellow paper all the way home with you. The electric boys have a circuit like that, and an event here is reported by a sense organ of some kind, and affects something that puts in here. Then you now cut off there and there, then you say there's an input and an output. Then you work on the box. What Wiener says is that you work on the whole picture and its properties. Now, there may be boxes inside here, like this, of all sorts, but essentially your ecosystem, your organism-plus-environment, is to be considered as a single circuit.

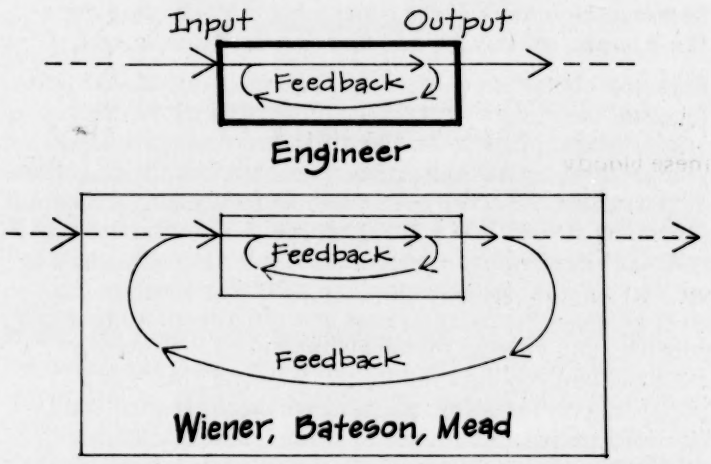
SB: The bigger circle there . . .

Bateson: And you're not really concerned with an input-output, but with the events within the bigger circuit, and you are part of the bigger circuit. It's these lines around the box (which are just conceptual lines after all) which mark the difference between the engineers and . . .

Mead: . . . and between the systems people and general systems theory, too.

Bateson: Yes.

SB: A kind of a Martin Buber-ish breakdown, "I-it", where they are trying to keep themselves out of that which



they're studying. The engineer is outside the box . . . and Wiener is inside the box.

Bateson: And Wiener is inside the box; I'm inside the box . . .

Mead: I'm inside the box. You see, Wiener named the thing, and of course the word "cybernetics" comes from the Greek word for helmsman.

Bateson: It actually existed as a word before Wiener – it's a nineteenth century word.

Mead: Yes, but he wrote the book **Cybernetics**[8] and sort of patented the idea to that extent. And then he went to Russia, and was very very well received. The Russians were crazy about this right away – it fit right into their lives. But one of the big difficulties in Russian psychology is that they have great difficulty learning that anything's irreversible. So cybernetics spread all over the Soviet Union very rapidly, and in Czechoslovakia, whereas what spread here was systems theory instead of cybernetics.

SB: How did that happen? It seems like something went kind of awry.

Mead: Americans like mechanical machines.

Bateson: They like tools.

SB: Material tools more than conceptual tools.

Bateson: No, because conceptual tools aren't conceptual tools in America, they're not part of you.

SB: How about McCulloch? He loved machinery. Did he also see himself as inside the box?

Mead: Well, one of the things he spent a great deal of time on was perception machines, separate sensory apparatus for the deaf or the blind.

[more ➔]

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MEAD: *That's all right. I do.*

[After reminiscence about other meetings following the Macy period the subject of "feed forward" comes up.]

Bateson: As far as I was ever able to make out "feed forward" was implicit and more or less explicit in the original Wiener paper. The feed forward process is what you get by using not the primary variable, but the derivative of the variable. You've got a machine for steering a ship, an automatic steerer, and you set her loose in the Atlantic, and you want her to go to London or some such place: she's to sail east. You have a compass card, and you measure the error between the compass card and the direction the ship's pointing, and you use that angle to control the steering machine, which pulls a rudder this way and that, right? Depending on the error. So, when the error is northward, the machine tells the rudder to swing it across southward, right? When it is going due east, the ship has way on, rotational momentum, and is going to go way over to the south of east, and now it's got a new error, and it's going to come back and go way over to the north of east, and it's going to go yawing all across the Atlantic, right?

SB: This is hunting, technically.

Bateson: This is technically hunting, and if you want to cut that down, what you've got to do is to have a machine on top of that machine, another machine which measures the rate at which the ship is correcting its error. The faster it is correcting its error, the slower you have it correct its error. It will then, you see, actually hold itself before it gets to due east. If you've ever handled the tiller of a small boat, you know the problem.

SB: It's a double layer in other words. The first machine is treating the boat as something which needs to be given negative feedback, and then the second machine is treating the first machine as something which needs to be given negative feedback.

Bateson: That's right. You've got a hierarchy of logical types there, and their various complexities.

SB: Is feed forward a kind of a discounting of part of the corrective signal?

Bateson: It's a discounting of the corrective signal in terms of the error which the corrective signal will generate if allowed to continue.

Mead: Now, Stewart, what we thought we were going to talk about, but you didn't let us say what we wanted to talk about, you started something else under the pretense that you wanted to start the tape recorder (I want to point out I followed all those maneuvers) what we had said we were going to talk about was the need of having "some data flowing through the system."

SB: Some data flowing through the system?

Bateson: Yes. I set my classes an assignment. If they can, they will handle it purely abstractly. And they then get off into an awful mess of ill-drawn abstractions which act upon other ill-drawn abstractions. But if you can make them fool around with data of any sort, while they're playing with the abstractions, then you get something. I keep a fish tank going there, because a fish tank is a nice thing, really, to have in the back of your mind while you're thinking about whatever it might be. Norbert Wiener, when he had a problem, used to sit with the wind blowing on a curtain.

Mead: I thought that was Von Neumann.

Bateson: It could have been Von Neumann. Pitts did it by disturbing his hair.

Now, this goes along with: "always the multiple approach." Any Hebrew poetry is like this. "The candles are white, as translucent as fishes," you know. "Lilies for joy, and lilies for funerals."; "How are the mighty fallen and the weapons of war perished." You get away from the pure verbalism by double-phrasing.

Bateson's Conditions of Discovery

1. **Some data flowing through the system. (A remedy for ill-drawn abstractions.)**
2. **Always the multiple approach. (What is true of all of them is the formal truth.)**

You make two statements, and what is true of both of them is the formal truth. This is what is called explanation.

SB: It's not that it's a repetition of the message, it's different derivations of the same message from different sources.

Bateson: Often. In psychoanalysis if you can recognize the same formal pattern in a dream and in a childhood memory and in how you're treating your analyst, you will say, "Aha, it's true." You've got it.

Mead: And when you're studying a culture.

SB: What would be an example there?

Mead: Well, you find the same pattern recurring in different aspects of the culture. You find, for instance, a house in which there's no ornamentation inside, all the ornamentation's on the gate. You find a people who are preoccupied with the external aspects of their skin and are always searching for some imperfection in their skin and believe that any breakage will impair them so that they're imperfect for something else, and so forth. With that kind of understanding, if you're told something, you can tell whether it fits or not.

For instance, the Balinese told us that they had marriage by capture, which didn't suit anything we'd understood about their culture. Our cook was going to carry off a girl by capture, so Gregory went outside the gate with him early in the morning, and the girl was there waiting. They looked around and there was nobody else there, so she trotted off with him. If there had been another group there, she would have pretended, she would have screamed and been carried off, because that was correct etiquette.

Then we had the case of a very stupid boy who thought it was true. He carried off a girl who had already planned to elope with somebody else. It took the society months to sort that out.

From a complex culture like Bali you take a lot of chunks – birthday ceremonies and funeral ceremonies, children's games, and a whole series of things, and then you analyze them for the patterns that are there.

Bateson: In Iatmul they have flutes. The flutes are long hollow bamboo, an inch and a half thick, five feet long, and one hole here, which you blow across. And from that you can get about five notes by overblowing, by harmonics. All right. You have a flute, you're blowing with me, and yours is tuned one tone higher than mine. So your harmonics fit between mine, right? Between us we've got quite a bit of scale. If we blow alternatively we can make a tune. Well, now this is how the generations are arranged. The grandparents go with the grandchildren, and the parents go with their grandchildren, and the initiation grades are like seniors – juniors – sophomores – freshmen, in which when you get a fight over initiation, the seniors and the sophomores go together, and the juniors and the freshmen go together. And so on.

SB: So what is the truth?

Mead's Sources of Insight

1. **Study infants.**
2. **Study animals.**
3. **Study primitive people.**
4. **Be psychoanalyzed.**
5. **Have a religious conversion and get over it.**
6. **Have a psychotic episode and get over it.**
7. **Have an affair with an Old Russian.**

Bateson: The truth is that Iatmul like to make this pattern. This is a pattern of organization that they think is nice.

Mead: When Gregory and Waddington talked to each other, I learned what I know about the way English biologists think, by listening to the two of them. They would pick their illustrations right across the field. One minute from embryology, the next from geology, the next from anthropology, back and forth, very freely, so that the illustrations from one spot illuminated, corrected and expanded the one from another. This is the thing that Americans are not taught to do. In our school system you have one year of chemistry, then you're through with chemistry probably, and then you have one year of physics. Whereas in the English system they took all of them at once in smaller doses that went along.

Nora Bateson: Goodbye.

Mead: Goodbye. Are you going to school now?

Nora: Yes.

Mead: Well, it's been lovely to see you, Nora.

Nora: It's been lovely to see you, too. Bye bye.

Bateson: Goodbye.

Nora: Bye Daddy.

SB: Margaret, an old student of yours told me you have a list of reliable sources of insight. What's the list?

Mead: I used to say to my classes that the ways to get insight are: to study infants; to study animals; to study primitive people; to be psychoanalyzed; to have a religious conversion and get over it; to have a psychotic episode and get over it; or to have a love affair with an Old Russian. And I stopped saying that when a little dancer in the front row put up her hand and said, "Does he have to be old?"

SB: How many of those have you done?

[Blank here while cassette was changed. Dr. Mead said she had studied infants and primitive people. When she got to animals in the list, the conversation swerved to Konrad Lorenz.]

Mead: Watching Konrad Lorenz be simultaneously a bird and a worm, is one of the really magnificent things in the world. You've seen that, haven't you, when he's describing a bird catching a worm, and he's both? Talk about the whole system, there it is.

Bateson: One of the things I've always regretted is that I didn't film him lecturing in Hawaii. One could've, I think. Lorenz is an Aurignacian.

SB: How do you mean?

Bateson: I mean that he is identified with animals. Aurignacians are the people who did the cave paintings, the good ones. Lorenz goes to the blackboard and there is a live dog, hesitating between attacking and retreating. He takes the eraser, and he wipes the tail off, changes the angle by ten degrees, and flattens out the hair on the back of the neck, and he says, "That dog's going to run." He sticks it the other way, and "That dog's going to attack." And he is the dog while he's talking about it. And this goes for cichlid fishes, bees, any goddamn thing. And then, in the final lecture he gave in Hawaii, he got all mixed up, you know, the way scientists do, with physics and the Einsteinian universe, and his body got twisted, as he started to talk about the Einsteinian universe where the straight lines are not straight anymore. That's what I wish I had on the camera. The others all think this is very unfair you know, he has all of this information that they simply don't have.

Mead: He contributes tremendous zest. If Lorenz is in a meeting, I can retire and take notes and think and have no responsibility to keep it going; whereas if he isn't there, I very often have to keep it awake. . . .

Gregory, have you any ideas on the subject of the harm that is done by television because of the rigidity of the body of people watching TV? Sartre discussed at one point what happened when you peek into a keyhole. When you look through a keyhole, the whole body is focussed to try to use this very small aperture, and he described what happens if you touch somebody who is looking through a keyhole. They jump. I have a big set, now, of comparative pictures of family groups (they weren't taken for this, they were taken for family albums) reading and looking at TV. When the family is reading, they're a thousand years away from each other, their eyes are all down, but you get a sense of community and relaxation. Their bodies are very loose, and undoubtedly there's movement going on as they read. But when they're watching television, the same people sit like this, they don't touch each other, and they're very rigid.

We have lots of material that if you move in your mind, your muscles don't get stiff. For years we had this very funny problem with catatonics, such as a man who would stand all day long in a ward with his eyes up and his hands together in prayer, never moving. They'd pick him up at night, tip him into a bed, feed him artificially, and then after five years or something, there's be a fire. He'd walk across the ward, pick up a telephone, report, "Fire in ward five," help get all the patients out, and then when the fire was out, back he went to his position. But he was not stiff. Whereas if you take the ordinary person and put them in bed for three months, they have to relearn how to walk. All the data we now have on monitoring muscles with tiny transistor monitors shows, if you think about skiing or exercising, the muscles that you use to ski will respond.

If you inhibit movement, as one does watching TV, with no empathy, no muscular involvement at all, I think this is the thing that's doing harm.

Bateson: I was wondering about looking through, for example, a camera.

Mead: Remember Clara Lambert and when you were trying to teach her? That woman who was making photographic studies of play schools, but she was using the camera as a telescope instead of as a camera. You said, "She'll never be a photographer. She keeps using the camera to look at things." But you didn't. You always used a camera to take a picture, which is a different activity.

Bateson: Yes. By the way, I don't like cameras on tripods, just grinding. In the latter part of the schizophrenic project, we had cameras on tripods just grinding.

Mead: And you don't like that?

Bateson: Disastrous.

Mead: Why?

Bateson: Because I think the photographic record should be an art form.

Mead: Oh why? Why shouldn't you have some records that aren't art forms? Because if it's an art form, it has been altered.

[more→]

Bateson: It's undoubtedly been altered. I don't think it exists unaltered.

Mead: I think it's very important, if you're going to be scientific about behavior, to give other people access to the material, as comparable as possible to the access you had. You don't, then, alter the material. There's a bunch of filmmakers now that are saying, "It should be art," and wrecking everything that we're trying to do. Why the hell should it be art?

Bateson: Well, it should be off the tripod.

Mead: So you run around.

Bateson: Yes.

Mead: And therefore you've introduced a variation into it that is unnecessary.

Bateson: I therefore got the information out that I thought was relevant at the time.

Mead: That's right. And therefore what do you see later?

Bateson: If you put the damn thing on a tripod, you don't get any relevance.

Mead: No, you get what happened.

Bateson: It isn't what happened.

Mead: I don't want people leaping around thinking that a profile at this moment would be beautiful.

Bateson: I wouldn't want beautiful.

Mead: Well, what's the leaping around for?

Bateson: To get what's happening.

Mead: What you think is happening.

Bateson: If Stewart reached behind his back to scratch himself, I would like to be over there at that moment.

Mead: If you were over there at that moment you wouldn't see him kicking the cat under the table. So that just doesn't hold as an argument.

Bateson: Of the things that happen the camera is only going to record one percent anyway.

Mead: That's right.

Bateson: I want that one percent on the whole to tell.

Mead: Look, I've worked with these things that were done by artistic film makers, and the result is you can't do anything with them.

Bateson: They're bad artists, then.

Mead: No, they're not. I mean, an artistic film maker can make a beautiful notion of what he thinks is there, and you can't do any subsequent analysis with it of any kind. That's been the trouble with anthropology, because they had to trust us. If we were good enough instruments, and we said the people in this culture did something more than the ones in that, if they trusted us, they used it. But there was no way of probing further into the material. So we gradually developed the idea of film and tapes.

Bateson: There's never going to be any way of probing further into the material.

Mead: What are you talking about, Gregory? I don't know what you're talking about. Certainly, when we showed that Balinese stuff that first summer there were different things that people identified – the limpness that Marion Stranahan identified, the place on the chest and its point in child development that Erik Erikson identified. I can go back over it, and show you what they got out of those films. They didn't get it out of your head, and they didn't get it out of the way you were pointing the camera. They got it because it was a long enough run so they could see what was happening.

SB: What about something like that Navajo film, "Intrepid Shadows?"[10]

Mead: Well, that is a beautiful, an artistic production that tells you something about a Navajo artist.

Bateson: This is different, it's a native work of art.

Mead: Yes, and a beautiful native work of art. But the only thing you can do more with that is analyze the filmmaker, which I did. I figured out how he got the animation into the trees.

Bateson: Oh yes? What do you get out of that one?

Mead: He picked windy days, he walked as he photographed, and he moved the camera independently of the movement of his own body. And that gives you that effect. Well, are you going to say, following what all those other people have been able to get out of those films of yours, that you should have just been artistic?

SB: He's saying he was artistic.

Mead: No, he wasn't. I mean, he's a good film maker, and Balinese can pose very nicely, but his effort was to hold the camera steady enough long enough to get a sequence of behavior.

Bateson: To find out what's happening, yes.

Mead: When you're jumping around taking pictures . . .

Bateson: Nobody's talking about that, Margaret, for God's sake.

Mead: Well.

Bateson: I'm talking about having control of a camera. You're talking about putting a dead camera on top of a bloody tripod. It sees nothing.

Mead: Well, I think it sees a great deal. I've worked with these pictures taken by artists, and really good ones . . .

Bateson: I'm sorry I said artists; all I meant was artists. I mean, artist is not a term of abuse in my vocabulary.

Mead: It isn't in mine either, but I . . .

Bateson: Well, in this conversation, it's become one.

Mead: Well, I'm sorry. It just produces something different. I've tried to use "Dead Birds,"[11] for instance . . .

Bateson: I don't understand "Dead Birds" at all. I've looked at "Dead Birds," and it makes no sense.

Mead: I think it makes plenty of sense.

Bateson: But how it was made I have no idea at all.

Mead: Well, there is never a long-enough sequence of anything, and you said absolutely that what one needed was long, long sequences from one position in the direction of two people. You've said that in print. Are you going to take it back?

Bateson: Yes, well, a long sequence in my vocabulary is twenty seconds.

Mead: Well, it wasn't when you were writing about Balinese films. It was three minutes. It was the longest that you could wind the camera at that point.

Bateson: A very few sequences ran to the length of the winding of the camera.

Mead: But if at that point you had had a camera that would run twelve hundred feet, you'd have run it.

Bateson: I would have and I'd have been wrong.

Mead: I don't think so for one minute.

Bateson: The Balinese film wouldn't be worth one quarter.

Mead: All right. That's a point where I totally disagree. It's not science.

Bateson: I don't know what science is, I don't know what art is.

Mead: That's all right. If you don't, that's quite simple. I do. *[To Stewart:]* With the films that Gregory's now repudiating that he took, we have had twenty-five years of re-examination and re-examination of the material.

Bateson: It's pretty rich material.

Mead: It is rich, because they're long sequences, and that's what you need.

Bateson: There are no long sequences.

Mead: Oh, compared with anything anybody else does, Gregory.

Bateson: But they're trained not to.

Mead: There are sequences that are long enough to analyze . . .

Bateson: Taken from the right place!

Mead: Taken from one place.

Bateson: Taken from the place that averaged better than other places.

Mead: Well, you put your camera there.

Bateson: You can't do that with a tripod. You're stuck. The thing grinds for twelve hundred feet. It's a bore.

Mead: Well, you prefer twenty seconds to twelve hundred feet.

Bateson: Indeed, I do.

Mead: Which shows you get bored very easily.

Bateson: Yes, I do.

Mead: Well, there are other people who don't, you know? Take the films that Betty Thompson studied.[12] That Karbo sequence – it's beautiful – she was willing to work on it for six months. You've never been willing to work on things that length of time, but you shouldn't object to other people who can do it, and giving them the material to do it.

There were times in the field when I worked with people without filming, and therefore have not been able to subject the material to changing theory, as we were able to do with the Balinese stuff. So when I went back to Bali I didn't see new things. When I went back to Manus, I did, where I had only still photographs. If you have film, as your own perception develops, you can re-examine it in the light of the material to some extent. One of the things, Gregory, that we examined in the stills, was the extent to which people, if they leaned against other people, let their mouths fall slack. We got that out of examining lots and lots of stills. It's the same principle. It's quite different if you have a thesis and have the camera in your hand, the chances of influencing the material are greater. When you don't have the camera in your hand, you can look at the things that happen in the background.

Bateson: There are three ends to this discussion. There's the sort of film I want to make, there's the sort of film that they want to make in New Mexico (which is "Dead Birds," substantially), and there is the sort of film that is made by leaving the camera on a tripod and not paying attention to it.

SB: Who does that?

Bateson: Oh, psychiatrists do that. Albert Scheflen[13] leaves a video camera in somebody's house and goes home. It's stuck in the wall.

Mead: Well, I thoroughly disapprove of the people that want video so they won't have to look. They hand it over to an unfortunate student who then does the rest of the work and adds up the figures, and they write a book. We both object to this. But I do think if you look at your long sequences of stills, leave out the film for a minute, that those long, very rapid sequences, Koewat Raoeh, those stills, they're magnificent, and you can do a great deal with

Gregory Bateson

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The famous dancer, Mario, teaches a preadolescent boy to dance, forcibly guiding the pupil's hands and body into the correct postures and almost throwing him across the dancing space. . . . Whether or not the Balinese "know" what they are doing and intend this outcome, they somehow sense and recognize in art that their kinesthetic socialization prepares the individual for altered consciousness – for a temporary escape from the ego-organized world.

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–SB

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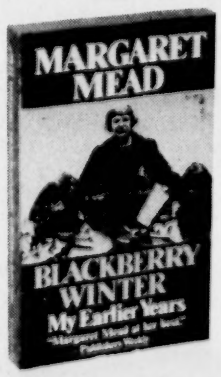


them. And if you hadn't stayed in the same place, you wouldn't have those sequences.

SB: Has anyone else done that since?

Mead: Nobody has been as good a photographer as Gregory at this sort of thing. People are very unwilling to do it, very unwilling.

SB: I haven't seen any books that come even close to **Balinese Character.**[14]

Mead: That's right, they never have. And now Gregory is saying it was wrong to do what he did in Bali. Gregory was the only person who was ever successful at taking stills and film at the same time, which you did by putting one on a tripod, and having both at the same focal length.

Bateson: It was having one in my hand and the other round my neck.

Mead: Some of the time, and some not.

Bateson: We used the tripod occasionally when we were using long telephoto lenses.

Mead: We used it for the bathing babies. I think the difference between art and science is that each artistic event is unique, whereas in science sooner or later once you get some kind of theory going somebody or other will make the same discovery.[15] The principal point is access, so that other people can look at your material, and come to understand it, and share it. The only real information that "Dead Birds" gives anybody are things like the thing that my imagination had never really encompassed, and that's the effect of cutting off joints of fingers. You remember? The women cut off a joint for every death that they mourn for, and they start when they're little girls, so that by the time they're grown women, they have no fingers. All the fine work is done by the men in that society, the crocheting and what not, because the men have fingers to do it with, and the women have these stumps of hands. I knew about it, I had read about it, it had no meaning to me until I saw those pictures. There are lots of things that can be conveyed by this quasi-artistic film, but when we want to suggest to people that it's a good idea to know what goes on between people, which is what you've always stressed, we still have to show your films, because there aren't any others that are anything like as good.

SB: Isn't that a little shocking? It's been, what, years?

Mead: Very shocking.

Bateson: It's because people are getting good at putting cameras on tripods. It isn't what happens between people.

Mead: Nobody's put any cameras on tripods in those twenty-five years that looked at anything that mattered.

Bateson: They haven't looked at anything that mattered, anyway. All right.

SB: I have a question that maybe relates to that, maybe not. What about field workers that join the tribe? Frank Cushing with the Zuni, and Carlos Castaneda, and such.

Mead: Castaneda hasn't joined the tribe.

SB: He hasn't joined the tribe, he's tried to join the practice.

Mead: No, only intermittently. We have examples. Edmund Carpenter's been making a study of these people.

SB: I've got some too. Everyone that knows anthropologists knows someone who's a little wiggy because of some over-zealous participation in something. And I wonder about that.

Mead: It's the temptation for another culture. We also have a case of a man who was studying the Chinese, and he married a Chinese girl. Which he then thought was enough anthropology; for quite a while he couldn't do anything else. It's a lot easier to study the cultures where you can't marry people, where there's such a gulf that that kind of over-identification

doesn't occur. The minute you study a culture where you might marry them, or adopt their children, or be adopted by them, you get new complications. Extreme ones.

SB: Sometimes the ones who lose track of where they are, they find a place to be confused between, and proceed to be confused between it.

Mead: I think that's a function of people who are confused wherever they are, anyway. One difference between pre-World War II anthropology and post-World War II is that most of us who did the pre-war work grew up in reasonably coherent cultures, and we knew what a pattern was when we saw one.[16] Remember that paper that I wrote that you invented the word "quizbits" for? (But the paper's called "Customs and Mores."[17]) It was a discussion of the extent to which information was being broken up into meaningless bits and fed to people. All your experience is chopped, everything out of scale. The news over the radio – one event is of world significance, the next is nothing. Contemporary young people have had the things that are presented to them so chopped up.

SB: You mean just in the speed with which they change, or the lack of integration?

Mead: The lack of integration. You get it on radio in New Guinea: "Kruschev has been deposed, there was a jewel robbery in the American Museum of Natural History, two small boats off Port Moresby have sunk," that's the news.

[Lois Bateson leans in on her way to an errand. Margaret will be gone by the time she returns. "OK, you people. See you in a while. I'm real glad you came, Margaret. Come again."]

Mead: Well, it's been lovely to see you.

SB: You mentioned Gerry O'Neill a while ago, as though you're somewhat involved in the space colony business.

Mead: Well, I've been interested in them, because of the possibilities of diversity. You see, I've always loved the Pacific islands, because they have such high degrees of diversity. When John Stroud first told me about space colonies, the picture was that you could have an area about the size of Los Angeles, and they would be undisturbed for 1500 years, so they could vary.

SB: I have a question that goes back to the Macy conferences, and it also relates to projects that Gregory's getting interested in now. What is the history of the failure of conceptual cybernetics to become public knowledge? You said that the later Macy meetings were starting to get a sense that you had something that everybody ought to know.

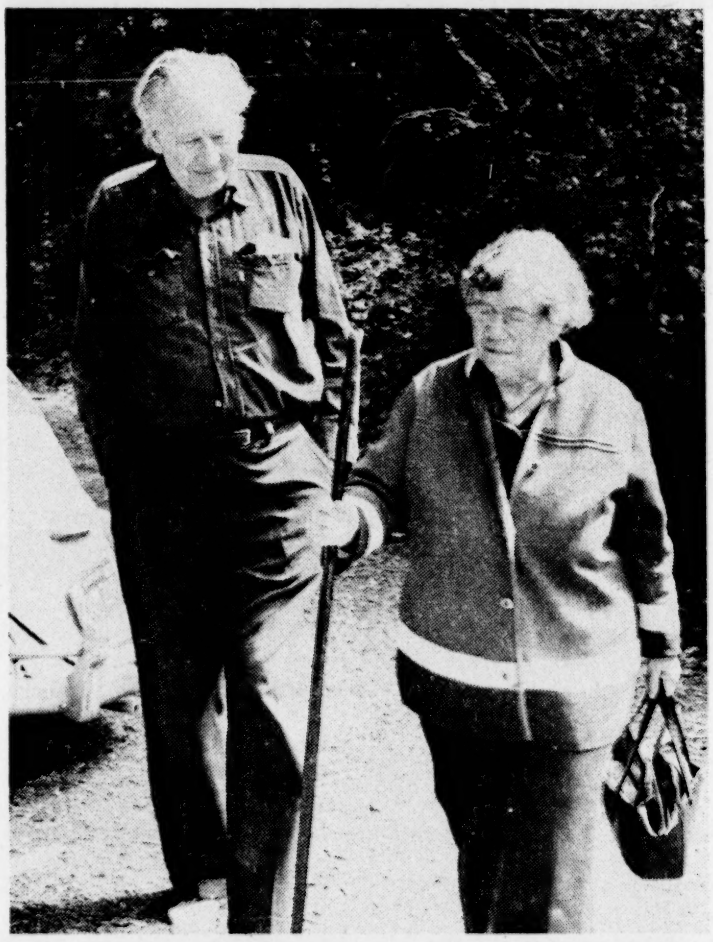
Mead: It wasn't quite as deep as that. We thought we had something that would be cross-disciplinary language. The meeting we had with the Academy of Sciences was to include more of the scientific community. Now, I worked a lot on that idea. **Continuities in Cultural Evolution** deals with the fact that in social science, unless you can carry the public with you, you can't use your findings. I think that we could trace part of the lack of response to the American preference for linear sequences, which is very high. It's like the Manus, too. They're both moral cause-and-effect societies. You do this, and that happens.

A problem I was going to raise, to Gregory, is why do you think the United States has more run-away positive feedbacks than most cultures?

SB: Such as?

Mead: Such as, gasoline taxes that can only be used on roads. With the tax you build more roads, which makes it possible to have more cars, which uses more gasoline. It's a perfect endless runaway. We have hundreds of them in this country.

Bateson: I think one of the things that's serious in this country is using the value one can catch hold of, rather than the real



Brand

1976, leaving Santa Cruz

value. Such as, catching gangsters for their income tax returns. I had a whole series of examples of this at one stage. The actual feedback circuit runs upon a collateral variable and you don't, from the circuit, get insight into the whole structure.

SB: Still, you say that's good when it comes to something like oxygen or carbon dioxide being the controller of breathing rates.

Bateson: This is exactly the problem. Where do you want to do this, and where do you want not to do it? At one stage I was saying, the thing to do is never to use the lethal variable to control the feedback.

Mead: The lethal variable?

Bateson: This was in asphyxia. The rate of breathing is not affected by the lack of oxygen but by the surplus of carbon dioxide in the blood. If you try to regulate by the lack of oxygen, it's already too late.

Mead: Well, we said the same thing, that if you're teaching children nutritional habits, don't do it with something that's related to nutrition. It's much safer to say, "We'll take you to a circus if you eat your spinach," than to say, "If you eat your spinach, you can have ice cream."

SB: Safer means?

Mead: Safer socially when you're bringing up children and you want them to learn to eat nutritionally good diets effortlessly. When you tie the eating to the food itself, if a child wants to fight about it, they fight about it by not eating the right food. So that you put all the trouble into the system. The Balinese say to a child when dressing a cut, "Listen to the gong, listen to the orchestra, go and see an orchestra!" There's no orchestra. She's just presenting something pleasant. Italian mothers do that. They say, "Ice cream! Ice cream! Lovely ice cream! Lovely ice cream!" while the child's having a cut fixed.

Americans say, "But she didn't mean it, she didn't give him any ice cream." Watergate, of course, was an outstanding

example. We didn't have to get Nixon because of Watergate. We were using Watergate because he was taking the country apart and had delusions of grandeur. I think if we'd known about the income tax, that would have done it.

I've wondered, Gregory, whether all of these things go together – the non-recognition of cybernetics in this country, as compared with the Soviet Union. I figure that they have about a hundred times as many people that understand the whole thing.

SB: Understanding it creatively and coming up with new thoughts?

Mead: That one doesn't know. We do know that they are using it for purposes of social organization, especially in Czechoslovakia.

Bateson: At that first cybernetic meeting we had a Russian talk. He hadn't much idea what it was all about, I thought.

Mead: I don't remember what he said at all.

Bateson: He had fifteen slides of circuit structures that would do various sorts of things like pattern recognition, or control temperature, or something. It was sort of about the level of the McCulloch and Pitts papers. Without, as far as I could make out, the enormous theoretical spin-off that those papers had.

Mead: And evidently I wrote him off so I can't remember.

Bateson: I think you wrote him off. I wrote him off very quickly.

Mead: Well, we had a period where I thought we could take cybernetics and use it as a language for communicating with the Russians, and then somebody in this country decided that the Russian cybernetic activities were very dangerous, and we had a big intelligence report on cybernetics. It ceased to be politics-free and was no longer useful. I wrote up a discussion of that, and decided anyway, that instead of having a methodology or conceptual scheme for communication, it was much better to have agreed-on sub goals for communication between two systems as antithetical as the Soviet and U.S.[19]

SB: Well then something funny seemed to happen with the whole general systems bunch. I've never understood that.

Mead: Well, there are a dreadful lot of systems people in the Society for General Systems Research. Then von Bertalanffy died. Anatol Rappaport runs a very isolated group. Now, when the Society for General Systems Research was formed in Atlanta, and Anatol was in the chair (I had never met him), and Ross Ashby was there on the front row, and there were about twenty people there, I went back to the correspondence, Gregory, where you had proposed that we plan an organization in relation to its purposes. This was before the cybernetics meetings, while you were overseas. When the Society for General Systems Research was formed, I proposed that we apply general systems to our society. Nobody knew who I was and I was feeling like the little old lady in tennis shoes. I went up at the end of it and talked to Ashby, and he said, "You mean we should apply our principles to ourselves?"

Bateson: In what tone of voice?

Mead: He was repudiating it, in a light playful voice that was appropriate, but he was repudiating it.

SB: So it was stillborn.

Mead: So now, the Society for General Systems Research, which is proliferating, is proliferating by the standard methods that are used in this country – regional chapters. I said to Dick Erickson, "I don't think we should be so conventional, we ought to think of something better." We can't get anybody to use any kind of constructive thinking on the problems of organization. And, of course, there's no place where you can get a well rounded degree in General System Theory. Rand has a school that is almost entirely military.

One of the most crazy situations – I was asked to speak at a dinner of the Air Force celebrating their fifth decade of Air Force intelligence. I talked about the fact that they weren't paying attention to the whole; the Air Force was modeling the Soviet Union as a system, and the Army was modeling the United States as a system, using different units, and they were both ignoring the fact that China existed, and therefore were making a hopeless mess when you knew you had a universe to deal with. What I was telling them was to use cybernetic thinking as it had developed into general systems theory. The next morning I was on a chartered plane bringing me back, and there was a man on it who said, "You left me way behind. I couldn't understand a word you said." I said, "What are you?" He said, "I'm an electronic specialist."

Americans are always solving problems piece-meal. They're always solving them *de nouveau* and artificially because they're all newcomers and they don't have decisions grounded in a culture. ■

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Carl Ortwin Sauer

1889-1975

BY JAMES J. PARSONS

Carl Sauer in the field, 1935.

Carl Ortwin Sauer, who died on July 18, 1975, at the age of eighty-five, left his mark indelibly on many of the historical, social, and biological sciences. By temperament and in his love for maps he was a born geographer. This was the label he chose, and it pleased him, but his work far transcended the bounds of any one academic discipline. As a student of the interrelatedness of land and life, of people and places, both now and throughout the full course of human history, he pointed the way towards a land ethic, "a responsible stewardship of the sustaining earth," for this and future generations. He, as much as anyone, has given the environmental movement an esthetic rationale and an historical perspective.

Sauer was born of German ancestry in Warrenton, Missouri, some fifty miles west of St. Louis, on Christmas eve, 1889. This mid-western German background had a major influence on his life and work. He must have found early pleasure in nature and the out-of-doors. His naturally retrospective character led him to refer back frequently and with affection to his Missouri days. He recently observed:

> By good fortune the chart of my course began in rural surroundings, the Ozark highland to the south, 'prairie plains' to the north, the diverse land forms providing instruction in earth history from Cambrian time through the Ice Age. Natural history was learned from the ample flora and fauna. An earlier generation remembered buffalo, elk, passenger pigeons and parakeets and a little of Indians. Of the original settlers a small number of families remained, largely in the backwoods. Settlement in strength began about 1830 and by 1860 had fully occupied the land.

As a schoolboy he had been sent to southern Germany, in the charge of relatives, for three years of study. After graduating from the long since defunct Central Wesleyan College in Warrenton, where his father was a teacher, he enrolled as a graduate in geology at Northwestern University. In his first year there he learned of "goings

Professor Parsons, a long-time student of Carl Sauer, succeeded him as head of the Geography Department at the University of California, Berkeley. I've been hearing of Sauer for years as one of the major influences on American poets such as Charles Olson, Gary Snyder, etc., as a man so routinely correct about matters so fundamental that a popular following never caught up with him. I'm grateful for the encouragement of Connie Armstrong and Bob Callahan that we use Sauer as the way to open the subject of biological and cultural geography in the CQ. *It's a subject I'd like to keep going from issue to issue.*

This obituary by Professor Parsons appeared this Spring in the **1975 Yearbook of the American Philosophical Society** *($5 from 104 South 5th St., Philadelphia, PA 19106).*

—SB

Professor Sauer in Mexico, 1940.

on" across town at the then new University of Chicago, where a geography program had been initiated, and he was attracted to it, enrolling in 1910 under the tutelage of the physiographer Rollin D. Salisbury. A few years later he had married Lorena Schowengerdt, a school friend from Warrenton, a devoted and supportive wife throughout their long and fulfilling lives. She died in Berkeley only a month before her husband. It is somehow quite impossible to imagine Carl Sauer without her. They shared every triumph and every disappointment.

In 1915, after a brief stint of teaching at Massachusetts State Normal School at Salem, Sauer accepted an appointment at the University of Michigan. In the same year he had filed his dissertation on **The Geography of the Ozark Highland of Missouri**, published in 1920 (Geographical Society of Chicago, Bulletin 20) which still stands as a model for regional cultural geography. His advance was rapid at Ann Arbor. In a period of seven years he moved from the rank of instructor to that of full professor. While formulating the Michigan Land Economic Survey, working in the cut-over lands of the north, his attention was attracted to the consequences of mismanagement of the land and the pervasiveness of the destructive exploitation of resources, a theme that was to concern him greatly in later years.

In 1923 he was called to the University of California, Berkeley, and it was there that he made his life and work. The move west opened up new horizons that he soon followed south with his students into Mexico and later into the further American tropics. For more than thirty years he was chairman of the department of geography at Berkeley, an unimaginably long time in these days of university bureaucracy and paperwork, but a charge he seemingly dispatched with almost effortless ease. His students came to form what was undoubtedly the most distinctive group of academic geographers in the country. His graduate seminars and field excursions especially spurred and sustained in them the spark of inquiry. He directed a total of thirty-seven Ph.D. dissertations; for other students, including many non-geographers, his influence was dominant. The "Berkeley School," with its humanistic, historical approach to geography and cultural history, came to be another way of saying the students of Carl Sauer.

He was a superb teacher, and he inspired the affection and loyalty of those around him. His inspiration and guidance was sought by many from outside of academic geography, especially from history, anthropology, and the life sciences. At times he seemed to us to know everything about everything, and to be able to discourse wisely on any aspect of nature or culture, anywhere, to the farthest reaches of human time. His was an intelligence of rare originality. In his lifetime he achieved the status of a legend.

The publication of his influential essay, **The Morphology of Landscape** (University of California Publication in Geography, 2, 2 (1925): pp. 19-53), brought him international attention. In it he had laid to rest with eloquence the specter of environmental determinism that had been haunting much of geography and stunting its development. Man, he said, largely determines his own destiny; the understanding of the agency of man on earth is a principal obligation and opportunity of geographic scholarship. This theme was explored explicitly and in detail in the Wenner-Gren-sponsored international symposium at Princeton in 1955, which he organized with the assistance of W.L. Thomas, Jr. The conference proceedings, published as **Man's Role in Changing the Earth**(University of Chicago Press, 1956), was a landmark volume that set the stage for many of the sharpened environmental concerns of the following decade.

Sauer's extensive publication list suggests the breadth of his interest: land-use planning, the evolution of desert land forms, prehistoric cultures of the Southwest and Mexico, the diffusion of mankind and man's cultural baggage including agricultural origins and dispersals, discovery and exploration of the New World, the broad sweep of Latin American cultural and demographic history, the settlement of his native Middle West, destructive exploitation of resources, and the philosophy of geography as a humane discipline. **Land and Life**, a selection of his papers edited by John Leighly (University of California Press) contains

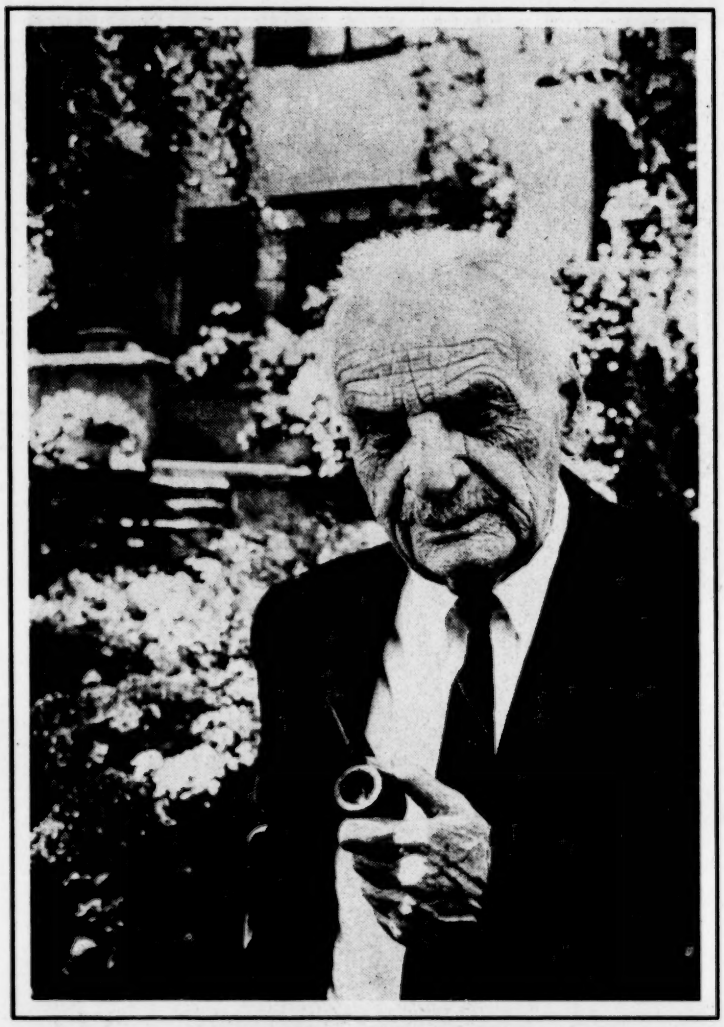
his complete bibliography to 1963. In retirement he wrote four books, all dealing in one way or another with the early European probings along the Atlantic and Caribbean fringes of the New World and the impact of European cultures on native societies. The most recent, **Seventeenth Century North America,** will appear posthumously. He never stopped working. In his last days he was sketching out the outline of a monograph on the geographical background of the American nation at its Bicentennial.

Sauer was much concerned with the direction in which much of the academy seemed to be drifting. He decried what he sensed as an increasing overemphasis on theory and method in the social sciences and called repeatedly for a renewal of earlier concerns for the study of man in comparative historical and ecological terms. The attachment of excessive merit to quantification, in particular, he thought was leading to the confusion of means with ends, industry with intellectual achievement. "The more social science confines itself to what may be measured," he wrote, "the more restricted the range of personalities and temperaments that will be attracted to it." He was especially dubious of the increasing dependence of scholars on granting institutions and concocted group projects, designed to meet the grantor's prescription. In the end, he said, "the able researcher will know best how he should employ his mind. . . . No groups can or should wish to be wise and farseeing enough to predetermine the quest for knowledge."

He wrote in a powerful and simple prose, with cadence and ring, and with a felicity of expression, that in later years attracted the attention of numerous modern writers and poets. For evocative descriptions of people and places he drew on a lifetime of direct field observation as well as on wide reading and archival search. He was much attracted to field study and chided modern geographers for their apparent disinclination to "get their boots muddy." He himself greatly enjoyed studying out a landscape and the traces of its past human occupance, the identification of flora, fauna, and surface features by direct observation, and mingling with simple country folk, for whom he had such sympathy and respect, and from whom he learned so much. But he was above all an historical geographer, especially of the New World, reaching back all the way "to the Ice Age and its witnesses." He was convinced that the Americas were peopled early and numerously and that with his fire and stone tools primitive man had begun to dominate his environment much earlier than conventional wisdom held. Recent archeologic investigations have tended to bear out his "hunches."

Sauer towered like a Chimborazo over the field of academic geography. He gave the impression of one for whom the experience of life had been rich beyond measure. Few, surely, have taken such complete advantage of its opportunities. His field of vision, encompassing equally man and nature, was uncommonly wide. He disliked the pace of modern life, its conspicuous and continuous innovation, its planned obsolescence, the mood of progress as common destiny. "My span," he wrote in 1960, "has covered seven decades that reach back to a greatly different world, one it was very good to have lived in." He did not especially relish the prospect which the next century seemed to offer.

His catholic interests led him to maintain contact with an extraordinarily wide circle of scholars, in many disciplines. His services and counsel were much sought. He served on the



Carl Sauer in his garden in Berkeley, 1973.

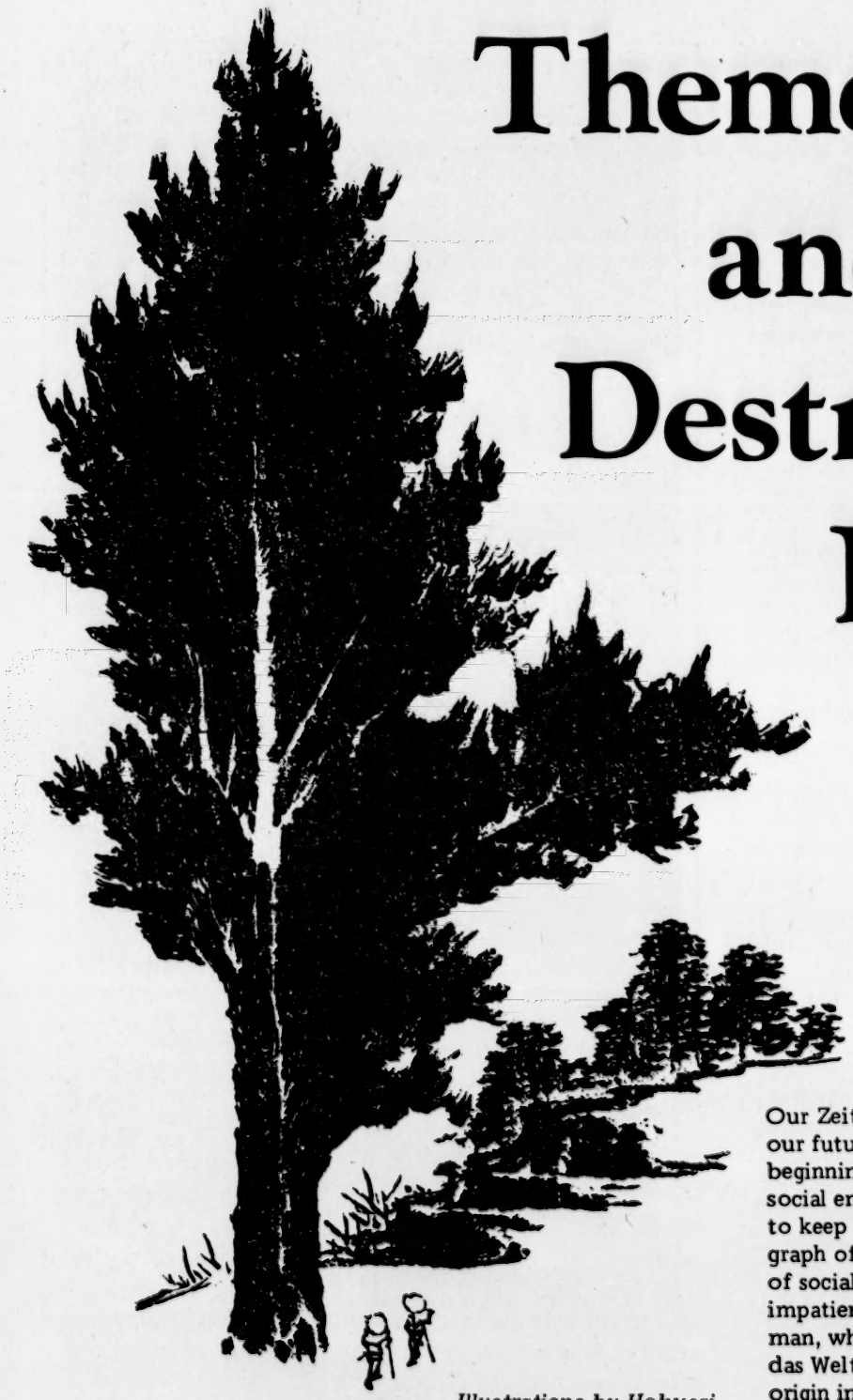
advisory boards, among others, of the Rockefeller Foundation, the John Simon Guggenheim Memorial Foundation, the U.S. Soil Conservation Service, the Conservation Foundation, the Social Science Research Council, the Committee on Latin American Studies of the American Council of Learned Scholars, the Office of Naval Research (Geography Branch), and the President's Science Advisory Board. He particularly enjoyed his long years of service on the committee charged with the selection of Guggenheim fellows, under his good friend Henry Allen Moe, which offered him the continuing opportunity to sense the pulse of the entire range of American scholarship.

Carl Sauer was much honored in his lifetime. Honorary degrees came from Heidelberg, Glasgow, Syracuse, and his own University of California at Berkeley. The American Philosophical Society elected him to membership in 1944; in recent years he had been its only geographer. He was awarded the American Geographical Society's Daly Medal, the Vega Medal of the Swedish Society for Anthropology and Geography, the Humboldt Medal of the Berlin Geographical Society, and, a month before his death, the Victoria medal of the Royal Geographical Society (London). He was twice president of the Association of American Geographers.

Sauer's intellectual virtuosity was matched by his personal warmth and unassuming grace. He encouraged young scholars of ability by his own example. He was probably about as close to the ideal of the nineteenth-century "universal man" as the twentieth century could produce. We are not likely to see another quite like him. ■

Theme of Plant and Animal Destruction in Economic History

BY CARL SAUER



Illustrations by Hokusai

This talk, so contemporary it could be given next year and be the best thing said all year, was given in 1938. (The same year I was busy being born.) Various sinking feelings accompany that realization. 1) Why was Sauer not heard and heeded? 2) Why hasn't environmental science and philosophy advanced much since? 3) If Sauer is right about "the agency of Man on Earth" then nature is hopelessly artifact and we can count on no wisdom not our own to save us. Claustrophobia follows. The human transition from mere biological dominant to adaptive biological regulator must come quickly and surely. The talk was the Presidential Address at the Eighth Special Science Research Conference of the Pacific Coast, San Francisco, March 24, 1938. It appeared in the Journal of Farm Economics, *Vol. 20, and is reprinted in* Land And Life – A Selection of The Writings of Carl Ortwin Sauer, *1963, University of California Press.*

–SB

Our Zeitgeist is congenial to debate and to the planning of our future by resolution. Perhaps such a mood marks the beginning of a great era, but even though we be far better social engineers than I think we are, it is still most important to keep track of the present as to its position on the long graph of history, to see where we stand on the trend curves of social change. We have neglected dreadfully, in our impatience to get at universals, the "natural history" of man, which is also expressed as "Die Weltgeschichte ist das Weltgericht." Institutions and outlooks have their origin in time and place; they spread from one group to another; with lapse of time and shifts of place they undergo change; they meet competition and resistance. Origins, derivations, and survivals are the basic determinations of social dynamics. How much of social science have we that has meaning apart from relations of space and time? We are not metaphysicists, we know even the Logos only as a term in culture history. Today's triumph in social theory is tomorrow's footnote to culture history. The facts we dig up may find permanent place in human learning. The constructions we place upon them, if they survive, survive as data of history.

In social science interpreted as culture history, there is a dominant geographic theme which deals with the growing mastery of man over his environment. Antiphonal to this is the revenge of an outraged nature on man. It is possible to sketch the dynamics of human history in terms of this antithesis.

We have traced the beginning of our direct lineage back about 25,000 years, when *Homo Sapiens* makes his appearance as an apparently finished product of evolution. More than half, perhaps two-thirds, of human history has passed before we come to the tremendous achievement of plant and animal

domestication. This marks the major step forward by man in his use of nature. It is carried out for a long time without any disturbance in the relation of man to his environment. Though growing steadily in cultural grace and stature, man long remains in symbiotic balance.

Perhaps as far back as Neolithic time, the first ominous discordance develops. The dry interiors of the Old World, from Cape Verde to Mongolia, are today a far more meager and more difficult human habitat than was true in early Neolithic. We know that their deterioration is much greater than can be accounted for by climatic change. Under similar physical conditions, the New World steppes and deserts bear a varied and useful cover of vegetation, whereas the Old World dry lands show tremendous wastes of shifting sands and denuded rock surface. Moisture values are not at all minimal in some of the bleakeast parts of the Sahara and Arabia, for instance. There are succcessful drought-tolerant plants aplenty in the Old World. The inference, therefore, is that the discrepancy between vegetation and climate in the Old World is due to cultural influence. Specifically, ancient overgrazing by herding peoples is blamed for the bareness of much of the great interior of the Old World. The damage developed perhaps three or four thousand years ago. Lapse of time has brought no repair of this destruction. The dry lands of the center of the Old World are permanently and sadly diminished in their utility.

The next major destruction of habitat values is associated with the Mediterranean lands and is assigned to the latter days of Rome or to the disordered period immediately following. Here again we know that modern productivity and known condition of land at the beginning of the Christian era do not coincide. The upland landscapes of the Mediterranean are not in line with their geomorphological situation. Bare rocks obtrude themselves on slopes where they do not belong. Normal soil profiles are wanting. The vegetation shows many characteristics of regression. Destructive exploitation has damaged seriously and permanently a great share of the lands about the Mediterranean. In spite of the lapse of many centuries, we have no evidence of significant regeneration of resource, but probably rather that of continued physical degeneration.

With these two major exceptions, we know of scarcely any record of destructive exploitation in all the span of human existence until we enter the period of modern history, when transatlantic expansion of European commerce, peoples, and governments takes place. Then begins what may well be the tragic rather than the great age of man. We have glorified this period in terms of a romantic view of colonization and of the frontier. There is a dark obverse to the picture, which we have regarded scarcely at all.

Much has been made of the disastrous impact of Spain on the New World. The polemics of Las Casas were carried on by Spain's political rivals and his theme of the Spanish destruction of the Indies lives on in popular misconceptions of the Spanish colonies. The first half-century following the discovery was indeed destructive. Then a desolation of the Indies by depopulation appeared imminent. These expectations, however, were realized only in part, partly because the severity of Old World epidemic diseases diminished and partly because of an increasingly effective governmental protection of native population and natural resources. The Spanish government developed and applied principles of conservative stewardship for which we find no parallels in other colonial countries at the time.

In the late eighteenth century the progressively and rapidly cumulative destructive effects of European exploitation become marked. They are indeed an important and integral part of the industrial and commercial revolution. In the space of a century and a half — only two full lifetimes — more damage has been done to the productive capacity of the world than in all of human history preceding. The previously characteristic manner of living within the means of an area, by use of its actual "surplus," is replaced at this time by a reckless gutting of resource for quick "profit." The early outstanding illustrations are the wearing-out of Virginia by tobacco planting and the effects of the China trade. The westward movement of Virginians was conditioned largely by the destruction of the land through tobacco. The development of the China trade via Cape Horn and the Chinese demand for furs and other animal products led quickly to a spoliation of pelagic mammals from the Falkland and South Orkney islands to Bering Sea. The opening of the nineteenth century, with the initiation of upland cotton planting, set our South definitely on its way to the permanent crisis in which it now is. In 1846 Charles Lyell described graphically the great gullies near Milledgeville, Georgia, and stated that they had not been in existence twenty years before. In 1864 George Marsh, distinguished jurist and forgotten scientist, wrote the first description and analysis of the destruction of our basis of subsistence. In the early nineties the washing out of western grazing lands became notable, a decade after the last great herd of buffalo was exterminated. At the outbreak of World War I the last passenger pigeon was dead and the last important stand of the white pine of the Great Lakes was being cut. In the present decade the topsoil of the wheat fields of the Great Plains is being carried by dust storms as far as the Atlantic. These are a few notes toward a history of the modern age. The modern world has been built on a progressive using up of its real capital.

The apparent paradox results that the lands of recent settlement are the worn and worn-out parts of the world, not the lands of old civilization. The United States heads the list of exploited and dissipated land wealth. Physically, Latin America is in much better shape than our own country. The contrast in condition of surface, soil, and vegetation is apparent at the international border between the United States and Mexico. For a reconstruction of upland soil profiles and normal vegetation of California we must go to Lower California. Chihuahua shows us what New Mexico was like a generation ago. The other parts of the world that have been opened to commerce in the last century and a half show parallels to the destructive exploitation of the United States. South Africa and Australia are well aware of their serious problems of conservation. South Russia is now becoming an active field for the study of soil erosion. Increasingly troublesome dust storms are sweeping the pampas of the Argentine, which is not characteristically Latin American in its economy, whereas more primitive Uruguay still has its land capital almost undiminished.

California is still in reasonably good condition as to physical resource. On the debit side we can cite the advanced destruction of redwood stands which are not able to restock, the brief expectation of life of our oil fields, the abandonment of unnumbered hillside farms in the Coast Ranges and the Sierra, the worn soils of the old barley and wheat districts on the west side of the Great Valley, and the general heavy loss of soil through overpasturing in hill lands. An excursion through the dairy country of Marin County, for instance, will show in almost every pasture serious evidences of soil stripping. Fortunately our primary agricultural resource lies in broad, smooth valleys that can not wash away, and the safety of the mountain forest lands is assured in large measure by the great extent of public forest land. California has sufficiently serious problems of conservation, but they are not life-and-death matters as in many states, and they can be solved without desperate expedients.

The overdraft on the young colonial lands has serious implications for the older regions of the North Atlantic. These depend on a flow of raw materials which probably cannot be maintained indefinitely. They doubled their population in this period of extractive commerce. Their own balanced agriculture is balanced only because

intensive animal husbandry is made possible by the supply of overseas feedstuffs such as bran, meal, and oil cake, and of commercial fertilizer, which imply continued extraction of resources overseas. The whole occidental commercial system looks like a house of cards.

Some of the losses that the world has thus sustained are the following:

1. The extinction of species and varietal forms. The extinction of large predators and grazing animals may perhaps be checked off as failure to survive in environments altered by economic needs. This does not apply, however, to a long list of other animals. The seas and their margins have been wantonly devastated of many mammals and birds without compensating substitutions. The killing off of our sea otter, for instance, has simply removed from our coasts the most valuable of all fur-bearing animals, whose presence would not diminish in the least any fishing or other marine activity of man.

The removal of species, moreover, reduces the possible future range of utility of organic evolution. This may be illustrated by the domesticated plants. Primitive plant breeders developed a very wide range of useful plant forms from a great number of wild ancestors. Our commercial plants are only a small fraction of the primitive domesticated species and varieties. Commercial corn growing, for instance, utilizes only two subspecies of maize; and of them only a small part of the range of genes that have been fixed by primitive plant breeding. Yet the qualities on which we have standardized for present-day commercial corn growing may not be the same as will be desired a century from now.

Meanwhile, the extension of commercial agriculture is causing a rapid extinction of the primitive domestic forms. Many species and far more numerous genetically fixed varieties have been lost irrevocably in late years. Of the great varietal range of upland cotton only a very few enter into the commercial forms. The extension of cotton in the United States, Egypt, and India has resulted in its disappearance over much of its primitive area of cultivation in Mexico and Central America, where the full range of varietal forms was developed. Yet these primitive forms hold by far the greater range of plant-breeding possibilities for future, as yet unrecognized needs. Some years ago we secured from southern Mexico seeds of a type of cotton, called Acala, that made possible the current development of cotton growing in the San Joaquin Valley. Had the plant explorer missed this particular spot in the state of Chiapas or come a few years later, we might not have a successful cotton industry in California. No one knows how many domestic varieties of cotton survive or have been lost.

In most domesticated plants and animals the greatest range of genes lies in noncommercial varieties. Until the late extension of commercial production the age-long tendency of the native husbandry was to continue and expand this range. Primitive husbandry was engaged in enlarging steadily the evolutionary process. Commercial production has caused and is causing a steady and great shrinkage of forms, because suddenly restricted standards of utility are introduced. Unfortunately, immediate and prospective utility may be very different things. This applies equally in criticism of the effect of our commercial civilization on wild and on domesticated forms of life: in both cases we have drastically impoverished the results of biological evolution.

2. The restriction of useful species. Often we have affected local rather than total extermination. There are still fur seals of one species on the Pribilov Islands, but we know no means of repopulating the many island rookeries from which they are gone. The eastern white pine is not extinct in the Great Lakes region, but it has been removed entirely from large areas where it once flourished. Its re-establishment may cause uneconomic costs of seeding or planting, or may be economically impossible because its place has been taken by inferior species that filled in the cut-over pine lands. Also ecologic associations, once seriously disturbed, may be very difficult or impossible to re-establish. Overgrazing has caused sagebrush to increase hugely in the cooler steppes of the West, and the equally unpalatable yucca and sotol on the hot steppes of the Southwest. If overgrazing were stopped at once on such lands, an indefinitely long time would still be required for the grass to replace the useless brush even if no damage to the soil has been done. Ecologic successions often are very slow; and once a degenerative plant succession has set in, a restoration is very uncertain. Fires, for instance, may reduce for a long period of years the utility of a site, by altering the quality of the soil.

3. Soil destruction is the most widespread and most serious debit to be entered against colonial commercial exploitation. Only a brief statement is made of this dreadful problem, for which there is never an easy solution, and often none at all. Under natural conditions — given a specific climate, vegetation, relief, and rock structure — there will be a characteristic soil as to depth and profile for any position on a slope. Soil and slope are in genetic relationship. Neither is static. Both naturally are changing very slowly. In the majority of cases the slope gradually grows less, and the soil on it weathers more deeply because it forms a bit more rapidly than it is removed at the surface. Soil formation and removal are either balanced, or formation exceeds removal; or, more rarely, removal exceeds formation. Soils develop slowly by weathering. The mechanically comminuted rock flour of our glacial lands has acquired approximately optimum characteristics in the course of about 25,000 years. This does not include weathering that starts from solid rock, but from the crushed materials of the glacial mill.

The Old World peasant agriculture, by placing animal products first, has maintained an adequate absorptive cover on the soil, as has the general farming-animal husbandry of north-western Europe and the northeastern United States. Row crops and bare fields in the off season have resulted in the diminution of absorptive organic matter in the soil. The surface had been exposed to the sluicing action of rains. Film after film is stripped by rain, diminishing steadily the depth of the top-soil, which is normally the most productive and most absorptive part of the soil, in some soils the only part that is fertile. Full soil sections are almost impossible to find in many parts of the South. The red color of southern uplands and of their streams is derived from the subsoil, which is now widely exposed at the surface. Southern farming is in large measure farming of the subsoil, made to yield crops only by liberal dosages of commercial fertilizer. The Ohio and the Mississippi are becoming yellow rivers, which indicates that the yellow subsoils of that part of the country are now widely exposed. It is in the gradual and too commonly unnoticed loss of the true soil that the greatest damage is effected. The product of uncounted centuries of weathering and soil development is removed by a few decades of farming. The much publicized destruction of land by gullying is only the final dramatic removal of the surface. The major and irreparable damage is done beforehand.

This loss of the soil horizon by rain wash is not confined to steep slopes, nor is it even most characteristic of the hillier lands. It has reduced many gentle uplands of the Piedmont and the Coast Plain to briar-grown pastures. It has destroyed, in the main, the old Black Belt of Alabama for cotton growing, with minimal slopes, many of less than one degree. It is invading the Black Prairies of Texas, and has made amazing headway in the past ten years on the smooth plains of central Oklahoma. All that is needed is a slope sufficient for muddy water to run on. Even the great Corn Belt is becoming very

badly frayed about the edges. The once rich counties of northwestern Missouri have been reduced to widespread distress. Serious damage is claimed for one-fourth of the area of Iowa.

Wind erosion is not bound to slope at all; it operates best, in fact, on level land. The baring by the plow of the dry margins of our farming land has there resulted in rapidly accelerated wind transport whenever there is a marked dry spell.

These losses are in many cases irreparable. Engineering devices are in the main palliatives that reduce rate of loss, but which under extreme weather conditions may increase the risk. The saving of worn land requires more labor, more skill, and more capital than the farming of good land, and then is of uncertain results. If one could place the best farmers on the worst-used land, some headway could be made. The cycle of degeneration is very, very difficult to break, and there is no salvation by any brilliant device.

To this summary review of some of the suicidal qualities of our current commercial economy the retort may be made that these are problems of the physical rather than of the social scientist. But the causative element is economic; only the pathologic processes released or involved are physical. The interaction of physical and social processes illustrates that the social scientist cannot restrict himself to social data alone. We cannot assume, as we are prone to do, an indefinitely elastic power of mind over matter. We are too much impressed by the large achievement of applied science. It suits our thinking to rely on a continuing adequacy on the part of the technician to meet our demands for production of goods. Our ideology is that of an indefinitely expanding universe, for we are the children of frontiersmen. We are prone to think of an ever ample world created for our benefit, by optimistic anthropocentric habits of thinking.

Let us admit for the moment that the supplying of the world with primary goods is simply a matter of the expenditure of energy, and that there is no lack of energy and no loss thereof. Even this optimistic assumption encounters the difficulty of the geography of population. The two billion inhabitants of the world have a very unequally localized distribution. It is going to be bitterly hard to arrest the declining capacity of many well-populated areas, as, for instance, our Old South. It is going to be difficult to find the means of shifting large numbers of people from crisis areas into areas of opportunity. Our Resettlement Administration has no trouble in discovering crisis areas, but it had slight success in finding areas that were ready to receive immigrants in number. The current national attitudes toward foreign immigration (witness Canada, Australia, Latin America) proceed in large part from a lately hardened conclusion that the resident populations are adequate to make use of the national opportunities. This attitude has become well-nigh world-wide. Decline in productivity is becoming characteristic of larger and larger areas. The generalization that the total productivity of the world might be maintained or raised gives no comfort to increasingly large numbers of people who are trapped in lands of fading economic resource. India may be suggested as an example, on a huge scale, of a country in which occidental political economy stimulated population growth and in which an overdraft on land resources will develop a major population crisis. What is to be done about such specific maldistributions?

Let us accept once more the view that the physical scientist will be able to make the requisite syntheses of matter to provide laboratory-made substitutes for the exhausted natural resources. There still remains the problem of the cost of distribution imposed by the geography of land and sea and climate. Freight must continue to be hauled, and costs incurred in the movement of goods. The dream of the growth of staggeringly great laboratories to give us synthetic products will require also great changes in comparative advantage of location. If we appeal to the sun for our salvation, we must build our visionary factories in deserts, along mountain fronts, and in great tidal bays, which fail to coincide with present distributions of dense and advanced populations, and which introduce additional charges in transport of power and goods.

The easy denial of our dilemma by referring it to the technologist is in large measure wishful thinking. It derives mainly from the successful, but relatively easy, experience in syntheses of hydrocarbons. We expect a lot from the laboratory technician when we ask him to supply the great range of biochemical compounds for which we are destroying the natural plant and animal laboratories, or even if we expect him to come near to meeting their cost of production from natural sources. But we demand a good deal more. Actually, we ask that chemistry become alchemy, that it achieve the transmutation of elements. The classical but far from singular illustration is the problem of the phosphates. Phosphorus is well known to be a very minor constituent of the earth's crust, too rare as a primary mineral to be recoverable in quantity. The loss of accumulated and available phosphorus from soils by destructive cropping is enormous, and forms one of our most acute problems. We are getting along by cleaning up the last of the guano deposits, which have been under exploitation for a century, and by using up the secondary mineral phosphates. The latter are highly localized fossil accumulations in certain ancient marine graveyards. These are pretty well known as to occurrence, and the reserves are not large. What then? The question, sharply asked by Cyril Hopkins, as to how civilization will survive the dissipation of this element critical to animal life, remains unanswered.

The doctrine of a passing frontier of nature replaced by a permanently and sufficiently expanding frontier of technology is a contemporary and characteristic expression of occidental culture, itself a historical-geographic product. This "frontier" attitude has the recklessness of an optimism that has become habitual, but which is residual from the brave days when north-European freebooters overran the world and put it under tribute. We have not yet learned the difference between yield and loot. We do not like to be economic realists. ■

A Carl Sauer Checklist

BY ROBERT CALLAHAN

I have known bright men and women who felt satisfied having digested the full detail of a single Sauer paragraph during a morning's reading. The good Doctor, as people are wont to say, sure can pack it in.

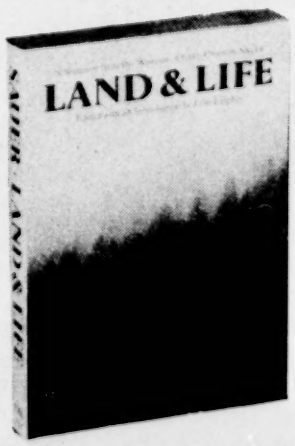
The 'ideal' Sauer paragraph shows clear evidence of the author's control of at least half a dozen inter-related anthropological and environmental sciences, all operating simultaneously to form a synoptic and original overview of the field under question.

Lest this sound too forbidding, Sauer's writing is also remarkably clear-headed, wonderfully personal and eccentric, and always humane. His best essays have the rhythm and lucidity of long symphonic poems.

Land and Life

The best introduction to the writings of Carl Sauer are the essays contained in John Leighly's edition of **Land and Life**. Some of the essays in the book have already become classics — "The Road to Cibola," "The Personality of Mexico," "Early Relations of Man to Plants," "Environment and Culture during the Last Deglaciation," "The Morphology of Landscape" — indeed all the essays in the book are deserving of close attention.

Land and Life was edited judiciously, and with great wisdom by Dr. John Leighly, Carl Sauer's colleague and associate at the University of California Berkeley for over fifty years. A second collection of **Selected Essays** is currently being prepared by Bob Callahan and James J. Parsons and will be published by the Turtle Island Foundation sometime in the near future.

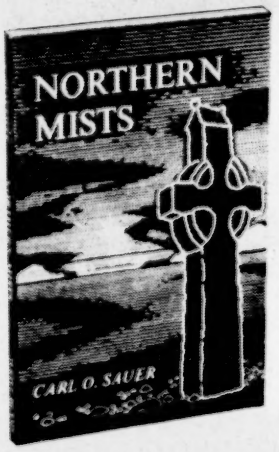


Land and Life
Carl O. Sauer
1969; 435pp.
$3.95
from:
University of California Press
2223 Fulton Street
Berkeley, CA 94720
or Whole Earth

Northern Mists

Throughout his entire career Carl Sauer considered himself primarily an historical geographer. His very first published works consisted of four historical geographies of the Middle Border — two on Illinois, one on Kentucky, and one on his native Missouri. When Carl Sauer arrived in California in 1923 he began his researches into the conditions of certain areas of Northern and Western (Baja) Mexico. In the course of his study he published ten additional monographs on these areas. John Leighly has included one of these essays, "The Road to Cibola," in **Land and Life**. A selection from some of the other 'Mexican' monographs will be contained in the forthcoming **Selected Essays**.

In his retirement years (1956 - 1975) Carl Sauer began to devote himself primarily to the historical study of the impact of European colonization upon both Native culture and the North American landscape. In chronological order **Northern Mists** takes up the theme of European knowledge and reconnaissance of the New World before Columbus, whereas **The Early Spanish Main** provides a detailed and critical portrait of the arrival of the Spanish in the Caribbean. **Sixteenth Century North America** continues the theme to discuss the impact of the first English and French colonies, while **Seventeenth Century North America** focuses for the most part on the early settlements of both the Southwest and the Middle Border. **Seventeenth Century North America** will be published by the Turtle Island Foundation in the coming year.



Northern Mists
Carl O. Sauer
1964; 204pp.
$3.75 postpaid
from:
Turtle Island Foundation
2845 Buena Vista Way
Berkeley, CA 94708
or Whole Earth

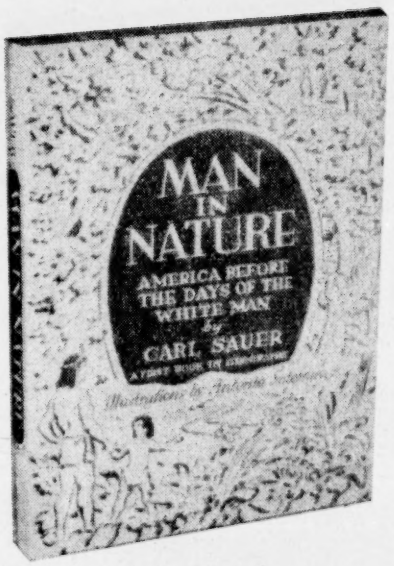
Although each of these books provides an original and fresh approach to a very important and popular subject, none of the books have ever received the critical attention they so richly deserve. The botanist Edgar Anderson has highlighted the problem:

"In **The Early Spanish Main**, for example, Carl Sauer presents a meticulous volume on the Old World's first contact with the civilizations of the New World. With the persistance of genius he did not put his account together until (1) he had visited all the significant sites in the Old World and the New, making his own penetrating observations of their geomorphology from the air and on the ground, and (2) he had studied the original accounts and had unearthed unnoticed (or forgotten) ones in European archives.

The anguish of book reviewers who were having to realign their geographical and historical backgrounds has obscured the contributions this volume brings to ethnography, ethnology, anthropology, the ecology of the tropics, the origin and development of agriculture, and the Melanesian threads in the tangled skein of early voyages about the Pacific."

Man in Nature

The need to provide an accurate view of the American landscape as it was on the eve of European colonization was very much on Carl Sauer's mind when he undertook to write **Man in Nature: America Before the Age of The White. A First Book in Geography in 1939**. Sauer used this opportunity, also, to provide on a region-to-region basis, convincing and sympathetic portraits of the ingenuity of the various American Indian tribes who then solely occupied this land. In **Man In Nature** (a 'children's book' that Robert Lowie among others used in his freshman class), Sauer was able to make the case for the ecological balances that these cultures tend to provide. The book was illustrated by Antonio Sotomayor, published by Scribner's in 1939, and received enthusiastic reviews by both White and Indian educators alike. However, shortly after its publication, with the demands of the Second World War upon them, Charles Scribner's Sons pulped the remainder of the edition. An all but forgotten Sauer 'classic' the book remained out of print until last year when it was re-issued by the Turtle Island Foundation.



Man in Nature
(America Before the Age of the Whiteman)
Carl O. Sauer
1975; 296pp.
$7.95 postpaid
($15.00 hardcover)
from:
Turtle Island Foundation
2845 Buena Vista Way
Berkeley, CA 94708
or Whole Earth

Seeds, Spades, Hearths and Herds

No survey of Carl Sauer's writing, however brief, would be complete without mention of the extraordinary series of lectures on the origins and domestication of agriculture he delivered in New York City in 1952. The series, commonly called the Bowman lectures, has recently been re-issued by the publisher, MIT Press. In a letter to Carl Sauer, dated September 23, 1952, Edgar Anderson wrote:

Dear Carl:

Well, I have just finished reading every word in your masterpiece in an orderly and consecutive fashion, referring to each note when it came up, turning to the Plates when they entered the discussion; all-in-all behaving in the sensible, systematic fashion in which my good German-American neighbors conduct their lives. You must realize that this is a unique tribute? I ordinarily read books simultaneously from the middle and the end and the beginning, and skip fearfully, to go back only if absolutely necessary.

I did all this partly because I knew that this was a true masterpiece, with all irrelevance stripped away and partly because the beautifully ordered development of your thought drove me to participate effortlessly in the unrolling as you had planned it.

I can't remember when I had my understanding of so many things enlarged in so short a time. Many of the details were well known to me, most of them I had at least heard about in a vague sort of way – here and there I had laboriously, insight by insight, put a few of the neighboring sections together – but the panorama is yours and my power over my own stock of knowledge has increased overnight as a result.

I like the style. You may remember that I once scolded you for an occasional loose phrase in the South American Handbook, saying that a man who had written the **Personality of Mexico** had a reputation to live up to. Well this is an advance stylistically. It is closer to Melville than one expects in a scientific essay – it is readable and effective, and it suits you and the occasion.

You were kind enough to suggest my book for parallel reading.* The two productions are oddly hand-and-glove are they not, even in the most unexpected places. The correspondence is quite as great for the matters we had talked over as for those we had not. Both of us hit on the possible African origin of Cotton as an oil-seed (or magic, or what not) preceding its long career as a fibre. The whole does go together, your book and mine, like a strange but harmonious duet for pipe organ and bassoon. ■

Seeds, Spades, Hearths and Herds
Carl O. Sauer
1956; 175pp.
$1.95 postpaid
from:
MIT Press
28 Carleton Street
Cambridge, MA 02142
or Whole Earth

*Plants, Man and Life by Edgar Anderson. University of California Press, $2.95.

Man and Earth's Ecosystems

I don't know that anyone has tried this before, a kind of regional culture history of the world in terms of environmental consequences of man's activities. Contemporary concerns are given new perspective with such a comprehensive review of human-caused landscape modification from the first purposefully set fire (Peking Man was a charcoal-maker) right down to the latest oil spill or reactor leak. Some of these things are covered in the old-style economic and cultural geographies but they take on new and deeper meaning in this explicitly ecologic context. The real meat lies in the continent-by-continent surveys of human influences on the ecosystems of Subsaharan Africa, of Asia, of Europe and the Mediterranean, of Australia, of North America and of Latin America. To emphasize the time dimension each region is presented in the order in which the genus Homo appears in the known fossil or cultural record. The concluding chapters are on islands (Hawaii, New Zealand, Madagascar) and on the oceans. Human influences on vegetation, on animal life, on surface and subsurface waters, on soils and geomorphology, on the atmosphere are discussed for each. Fire, agricultural systems, and the deliberate or accidental transfers of both wild and domestic plants and animals from one part of the world to another receive special emphasis. Carl Sauer would have approved.

This is the basic text for a new ecosystems analysis major at UCLA. Photos are superb. It just might give you a new faith in what higher education is up to, and geographers.

—James J. Parsons

Man and Earth's Ecosystems
(An introduction to the Geography of Human Modification of the Earth)
Charles F. Bennet, Jr.
1975: 325pp.
$13.95 postpaid
from:
John Wiley & Sons, Inc.
One Wiley Dr.
Somerset, NJ 08873
or Whole Earth

Under slash and burn cultivation, it is not usual to set the plants out in straight rows, but the plots can be remarkably productive. They have several natural advantages for societies possessing limited technical means, chief among which is that almost any slope, however steep, can be cultivated.

The world geographical distribution of slash and burn cultivation, although reduced in recent centuries, is still geographically widespread, particularly in the low latitudes. So common is this system in the low latitudes that many persons have regarded it as a tropical system of agriculture unsuited to the middle latitudes. This is not true. Slash and burn cultivation once had a very important development in the middle latitudes, particularly in parts of Eurasia.

●

Terraced slopes in the Andes

Trees

BY JEAN GIONO

For a human character to reveal truly exceptional qualities, one must have the good fortune to be able to observe its performance over many years. If this performance is devoid of all egoism, if its guiding motive is unparalleled generosity, if it is absolutely certain that there is no thought of recompense and that, in addition, it has left its visible mark upon the earth, then there can be no mistake.

About forty years ago I was taking a long trip on foot over mountain heights quite unknown to tourists in that ancient region where the Alps thrust down into Provence. All this, at the time I embarked upon my long walk through these deserted regions, was barren and colorless land. Nothing grew there but wild lavender.

I was crossing the area at its widest point, and after three days' walking found myself in the midst of unparalleled desolation. I camped near the vestiges of an abandoned village. I had run out of water the day before, and had to find some. These clustered houses, although in ruins, like an old wasps' nest, suggested that there must once have been a spring or well here. There was, indeed, a spring, but it was dry. The five or six houses, roofless, gnawed by wind and rain, the tiny chapel with its crumbling steeple, stood about like the houses and chapels in living villages, but all life had vanished.

It was a fine June day, brilliant with sunlight, but over this unsheltered land, high in the sky, the wind blew with unendurable ferocity. It growled over the carcasses of the houses like a lion disturbed at its meal. I had to move my camp.

After five hours' walking I had still not found water, and there was nothing to give me any hope of finding any. All about me was the same dryness, the same coarse grasses. I thought I glimpsed in the distance a small black silhouette, upright, and took it for the trunk of a solitary tree. In any case I started towards it. It was a shepherd. Thirty sheep were lying about him on the baking earth.

He gave me a drink from his watergourd and, a little later, took me to his cottage in a fold of the plain. He drew his water – excellent water – from a very deep natural well above which he had constructed a primitive winch.

The man spoke little. This is the way of those who live alone, but one felt that he was sure of himself, and confident in his assurance. That was unexpected in this barren country. He lived, not in a cabin, but in a real house built of stone that bore plain evidence of how his own efforts had reclaimed the ruin he had found there on his arrival. His roof was strong and sound. The wind on its tiles made the sound of the sea upon its shores.

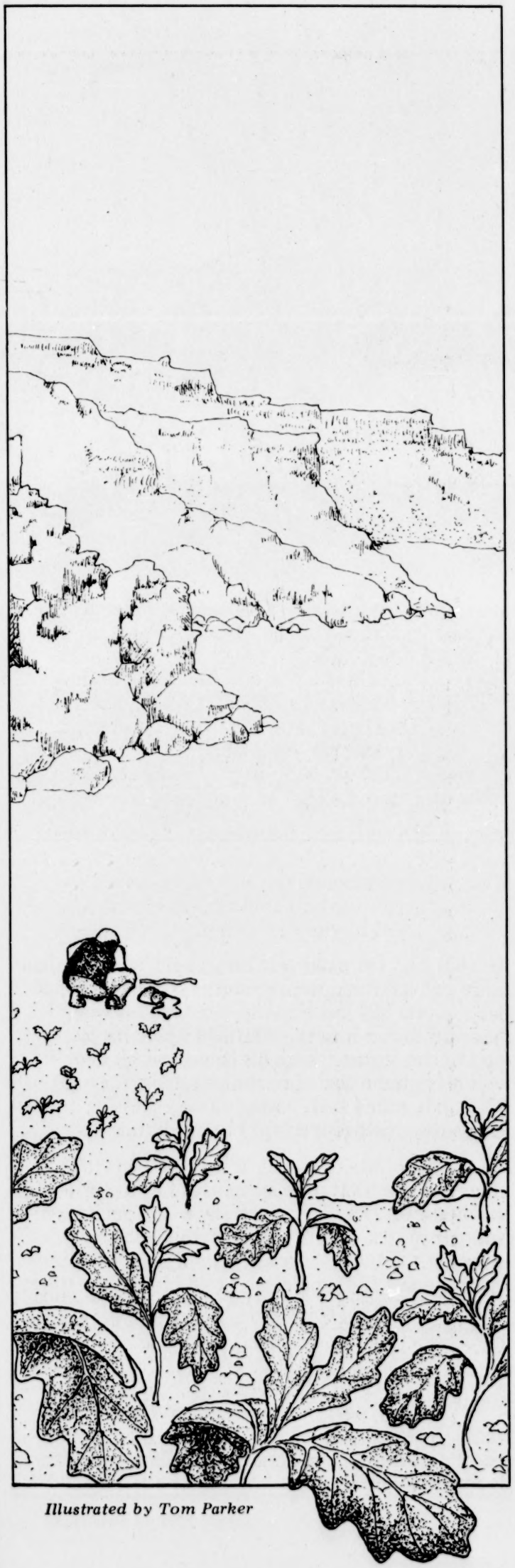
A man plants trees and a region is changed. His story is told and a world is changed.

I've no idea how many times this account, originally titled "The Man Who Planted Hope and Grew Happiness" has been reprinted. Lloyd Kahn insisted we carry it in the WHOLE EARTH EPILOG. Gurney Norman insisted we reprint it here.

By kind permission of Mr. Martin R. Haase, Executive Secretary of The Friends of Nature, we are doing that. You can buy copies of the story for $ .75 postpaid from Friends of Nature, c/o Miss Ellen R. Riggs, 92 Arlington St., Winchester, MA 01890.

Illustrator Tom Parker, a former biologist, did the research to be sure he got the Provence landscape, barren and verdant, right.

–SB



Illustrated by Tom Parker

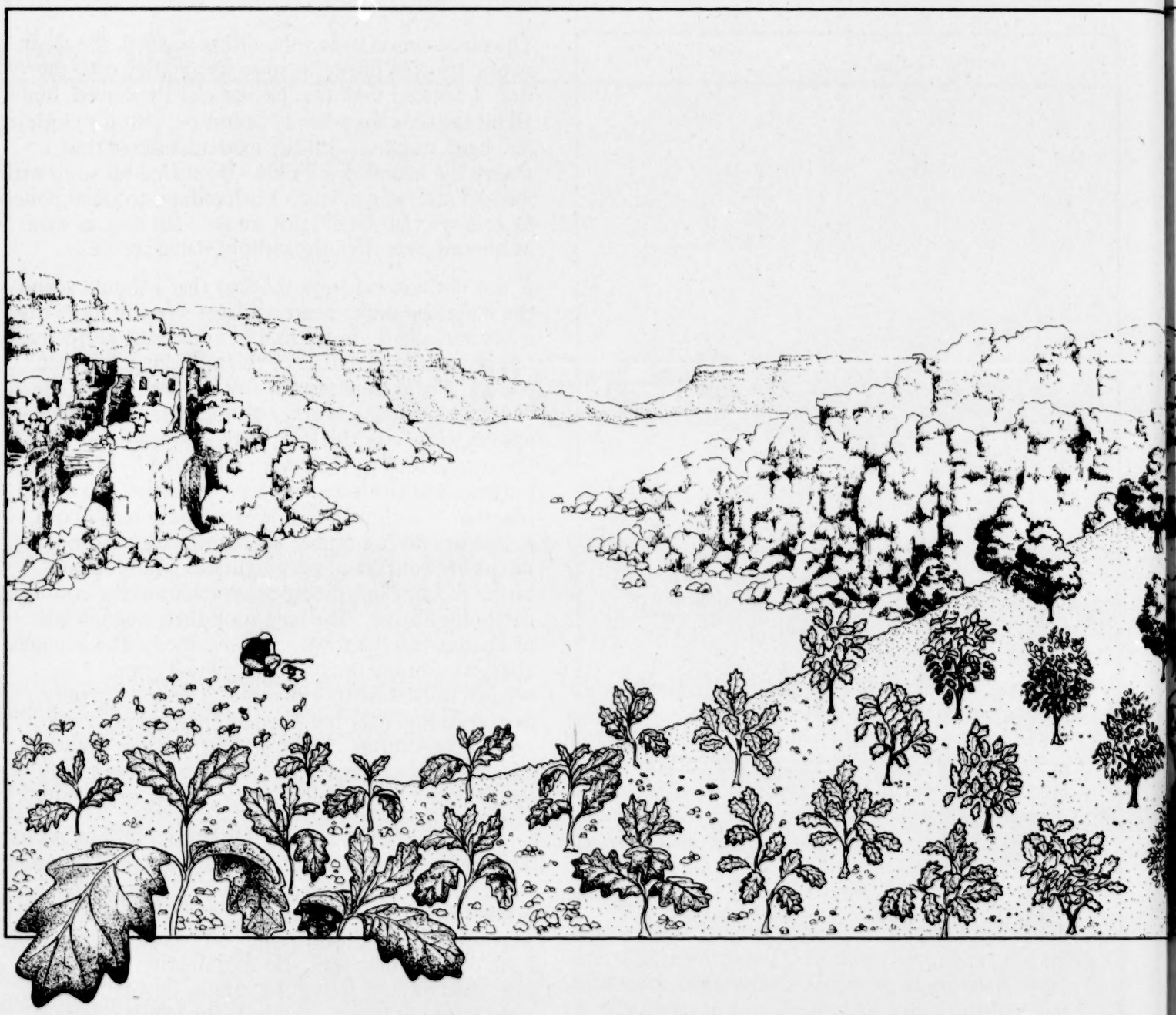
The place was in order, the dishes washed, the floor swept, his rifle oiled; his soup was boiling over the fire. I noticed then that he was cleanly shaved, that all his buttons were firmly sewed on, that his clothing had been mended with the meticulous care that makes the mending invisible. He shared his soup with me and afterwards, when I offered my tobacco pouch, he told me that he did not smoke. His dog, as silent as himself, was friendly without being servile.

It was understood from the first that I should spend the night there; the nearest village was still more than a day and a half away. And besides I was perfectly familiar with the nature of the rare villages in that region. There were four or five of them scattered well apart from each other on these mountain slopes, among white oak thickets, at the extreme end of the wagon roads. They were inhabited by charcoal-burners, and the living was bad. Families, crowded together in a climate that is excessively harsh both in winter and in summer found no escape from the unceasing conflict of personalities. Irrational ambition reached inordinate proportions in the continual desire for escape. The men took their wagonloads of charcoal to the town, then returned. The soundest characters broke under the perpetual grind. The women nursed their grievances. There was rivalry in everything, over the price of charcoal as over a pew in the church. And over all there was the wind, also ceaseless to rasp upon the nerves. There were epidemics of suicide and frequent cases of insanity, usually homicidal.

The shepherd went to fetch a small sack and poured out a heap of acorns on the table. He began to inspect them, one by one, with great concentration, separating the good from the bad. I smoked my pipe. I did offer to help him. He told me that it was his job. And in fact, seeing the care he devoted to the task, I did not insist. That was the whole of our conversation. When he had set aside a large enough pile of good acorns he counted them out by tens, meanwhile eliminating the small ones or those which were slightly cracked, for now he examined them more closely. When he had thus selected one hundred perfect acorns he stopped and he went to bed.

There was peace in being with this man. The next day I asked if I might rest here for a day. He found it quite natural – or to be more exact, he gave me the impression that nothing could startle him. The rest was not absolutely necessary, but I was interested and wished to know more about him. He opened the pen and led his flocks to pasture. Before leaving, he plunged his sack of carefully selected and counted acorns into a pail of water.

I noticed that he carried for a stick an iron rod as thick as my thumb and about a yard and a half long. Resting myself by walking, I followed a path parallel to his. His pasture was in a valley. He left the little flock in charge of the dog and climbed towards where I stood. I was afraid that he was about to rebuke me for my indiscretion, but it was not that at all: this was the way he was going, and he invited me to go



along if I had nothing better to do. He climbed to the top of the ridge about a hundred yards away.

There he began thrusting his iron rod into the earth, making a hole in which he planted an acorn; then he refilled the hole. He was planting an oak tree. I asked him if the land belonged to him. He answered no. Did he know whose it was? He did not. He supposed it was community property, or perhaps belonged to people who cared nothing about it. He was not interested in finding out whose it was. He planted his hundred acorns with the greatest care. After the midday meal he resumed his planting. I suppose I must have been fairly insistent in my questioning, for he answered me. For three years he had been planting trees in this wilderness. He had planted 100,000. Of these, 20,000 had sprouted. Of the 20,000 he still expected to lose about half to rodents or to the unpredictable designs of Providence. There remained 10,000 oak trees to grow where nothing had grown before.

That was when I began to wonder about the age of this man. He was obviously over fifty. Fifty-five, he told me. His name was Elzeard Bouffier. He had once had a farm in the lowlands. There he had had his life. He had lost his only son, then his wife. He had withdrawn into this solitude, where his pleasure was to live leisurely with his lambs and his dog. It was his opinion that this land was dying for want of trees. He added that, having no very pressing business of his own, he had resolved to remedy this state of affairs.

Since I was at that time, in spite of my youth, leading a solitary life, I understood how to deal gently with solitary spirits. But my very youth forced me to consider the future in relation to myself and to a certain quest for happiness. I told him that in thirty years his 10,000 oaks would be magnificent. He answered quite simply that if God granted him life, in thirty years he would have planted so many more that these 10,000 would be like a drop of water in the ocean.

Besides, he was now studying the reproduction of beech trees and had a nursery of seedlings grown from beechnuts near his cottage. The seedlings,

which he protected from his sheep with a wire fence, were very beautiful. He was also considering birches for the valleys where, he told me, there was a certain amount of moisture a few yards below the surface of the soil.

The next day we parted.

The following year came the War of 1914, in which I was involved for the next five years. An infantryman hardly had time for reflecting upon trees. To tell the truth, the thing itself had made no impression upon me; I had considered it as a hobby, a stamp collection, and forgotten it.

The war over, I found myself possessed of a tiny demobilization bonus and a huge desire to breathe fresh air for a while. It was with no other objective that I again took the road to the barren lands.

The countryside had not changed. However, beyond the deserted village I glimpsed in the distance a sort of greyish mist that covered the mountaintops like a carpet. Since the day before, I had begun to think again of the shepherd tree-planter. "Ten thousand oaks," I reflected, "really take up quite a bit of space." I had seen too many men die during those five years not to imagine easily that Elzeard Bouffier was dead, especially since, at twenty, one regards men of fifty as old men with nothing left to do but die. He was not dead. As a matter of fact he was extremely spry. He had changed jobs. Now he had only four sheep but, instead, a hundred beehives. He had got rid of the sheep because they threatened his young trees. For, he told me (and I saw for myself), the war had disturbed him not at all. He had imperturbably continued to plant.

The oaks of 1910 were then ten years old and taller than either of us. It was an impressive spectacle. I was literally speechless and, as he did not talk, we spent the whole day walking in silence through his forest. In three sections, it measured eleven kilometers in length and three kilometers at its greatest width. When you remembered that all this had sprung from the hands and the soul of this one man, without technical resources, you understand

that men could be as effectual as God in realms other than that of destruction.

He had pursued his plan, and beech trees as high as my shoulder, spreading out as far as the eye could reach, confirmed it. He showed me handsome clumps of birch planted five years before – that is, in 1915, when I had been fighting at Verdun. He had set them out in all the valleys where he had guessed – and rightly – that there was moisture almost at the surface of the ground. They were as delicate as young girls, and very well established.

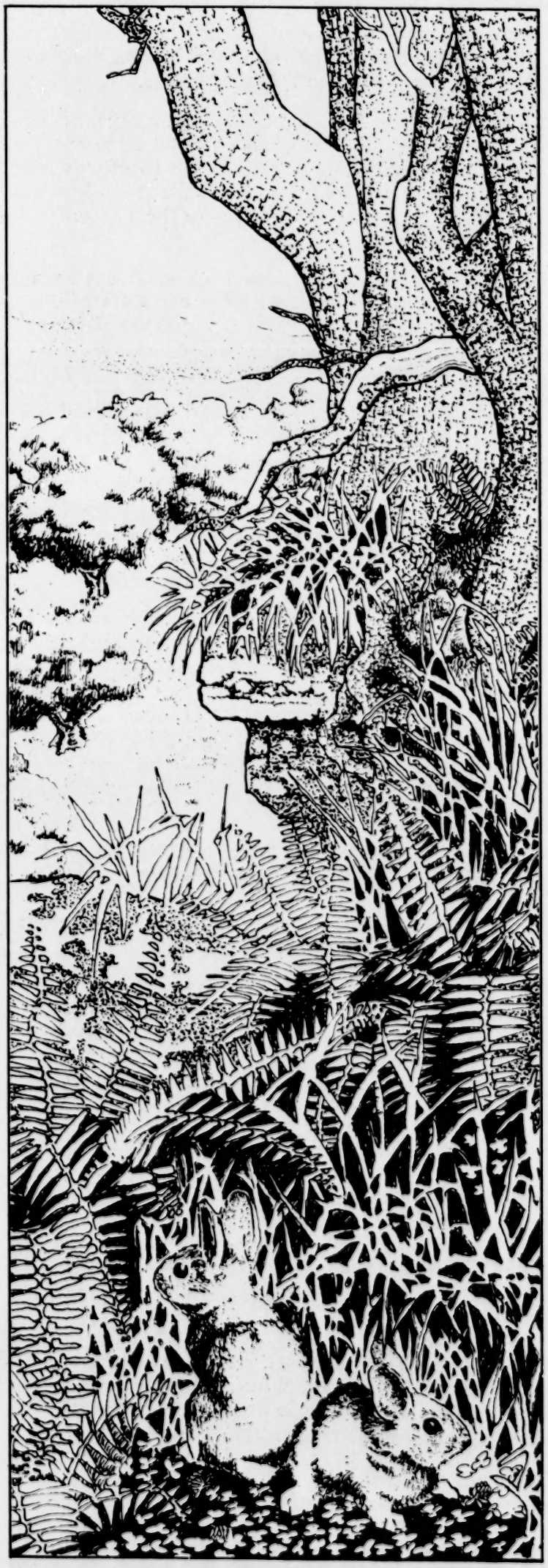
Creation seemed to come about in a sort of chain reaction. He did not worry about it; he was determinedly pursuing his task in all its simplicity; but as we went back towards the village I saw water flowing in brooks that had been dry since the memory of man. This was the most impressive result of chain reaction that I had seen. These dry streams had once, long ago, run with water. Some of the dreary villages I mentioned before had been built on the sites of ancient Roman settlements, traces of which still remained; and archaeologists, exploring there, had found fishhooks where, in the twentieth century, cisterns were needed to assure a small supply of water.

The wind, too, scattered seeds. As the water reappeared, so there reappeared willows, rushes, meadows, gardens, flowers, and a certain purpose in being alive. But the transformation took place so gradually that it became part of the pattern without causing any astonishment. Hunters, climbing into the wilderness in pursuit of hares or wild boar, had of course noticed the sudden growth of little trees, but had attributed it to some caprice of the earth. That is why no one meddled with Elzeard Bouffier's work. If he had been detected he would have had opposition. He was undetectable. Who in the villages or in the administration could have dreamed of such perseverance in a magnificent generosity?

To have anything like a precise idea of this exceptional character one must not forget that he worked in total solitude: so total that, towards the end of his life, he lost the habit of speech. Or perhaps it was that he saw no need for it.

In 1933 he received a visit from a forest ranger who notified him of an order against lighting fires out of doors for fear of endangering the growth of this *natural* forest. It was the first time, the man told him naively, that he had ever heard of a forest growing of its own accord. At that time Bouffier was about to plant beeches at a spot some twelve kilometers from his cottage. In order to avoid travelling back and forth – for he was then seventy-five – he planned to build a stone cabin right at the plantation. The next year he did so.

In 1935 a whole delegation came from the Government to examine the "natural forest." There was a high official from the Forest Service, a Deputy, technicians. There was a great deal of ineffectual talk. It was decided that something must be done and, fortunately, nothing was done except the only helpful thing: the whole forest was placed under the protection of the



State, and charcoal burning prohibited. For it was impossible not to be captivated by the beauty of those young trees in the fullness of health, and they cast their spell over the Deputy himself.

A friend of mine was among the forestry officers of the delegation. To him I explained the mystery. One day the following week we went together to see Elzeard Bouffier. We found him hard at work, some ten kilometers from the spot where the inspection had taken place.

This forester was not my friend for nothing. He was aware of values. He knew how to keep silent. I delivered the eggs I had brought as a present. We shared our lunch among the three of us and spent several hours in wordless contemplation of the countryside.

In the direction from which we had come the slopes were covered with trees twenty to twenty-five feet tall. I remembered how the land had looked in 1913: a desert . . . Peaceful, regular toil, the vigorous mountain air, frugality and, above all, serenity in the spirit had endowed this old man with awe-inspiring health. He was one of God's athletes. I wondered how many more acres he was going to cover with trees.

Before leaving my friend simply made a brief suggestion about certain species of trees that the soil here seemed particularly suited for. He did not force the point, "for the very good reason," he told me later, "that Bouffier knows more about it than I do." At the end of an hour's walking – having turned it over in his mind – he added, "He knows a lot more about it than anybody. He's discovered a wonderful way to be happy!"

It was thanks to this officer that not only the forest but also the happiness of the man was protected. He delegated three rangers to the task, and so terrorized them that they remained proof against all the bottles of wine the charcoal-burners could offer.

The only serious danger to the work occurred during the War of 1939. As cars were being run on gazogenes (wood-burning generators), there was never enough wood. Cutting was started among the oaks of 1910, but the area was so far from any railway that the enterprise turned out to be financially unsound. It was abandoned. The shepherd had seen nothing of it. He was thirty kilometers away, peacefully continuing his work, ignoring the war of 1939 as he had ignored that of 1914.

I saw Elzeard Bouffier for the last time in June of 1945. He was then eighty-seven. I had started back along the route through the wastelands; but now, in spite of the disorder in which the war had left the country, there was a bus running between the Durance Valley and the mountain. I attributed the fact that I no longer recognized the scenes of my earlier journeys to this relatively speed transportation. It took the name of a village to convince me that I was actually in that region that had been all ruins and desolation.

The bus put me down at Vergons. In 1913 this hamlet of ten or twelve houses had three inhabitants. They had been savage creatures, hating one another, living by trapping game, little removed, physically and morally, from the conditions of prehistoric man. All about them nettles were feeding upon the remains of abandoned houses. Their condition had been beyond hope. For them, nothing but to await death – a situation which rarely predisposes to virtue.

Everything was changed. Even the air. Instead of the harsh dry winds that used to attack me, a gentle breeze was blowing, laden with scents. A sound like water came from the mountains; it was the wind in the forest; most amazing of all, I heard the actual sound of water falling into a pool. I saw that a fountain had been built, that it flowed freely and – what touched me most – that someone had planted a linden beside it, a linden that must have been four years old, already in full leaf, the incontestable symbol of resurrection.

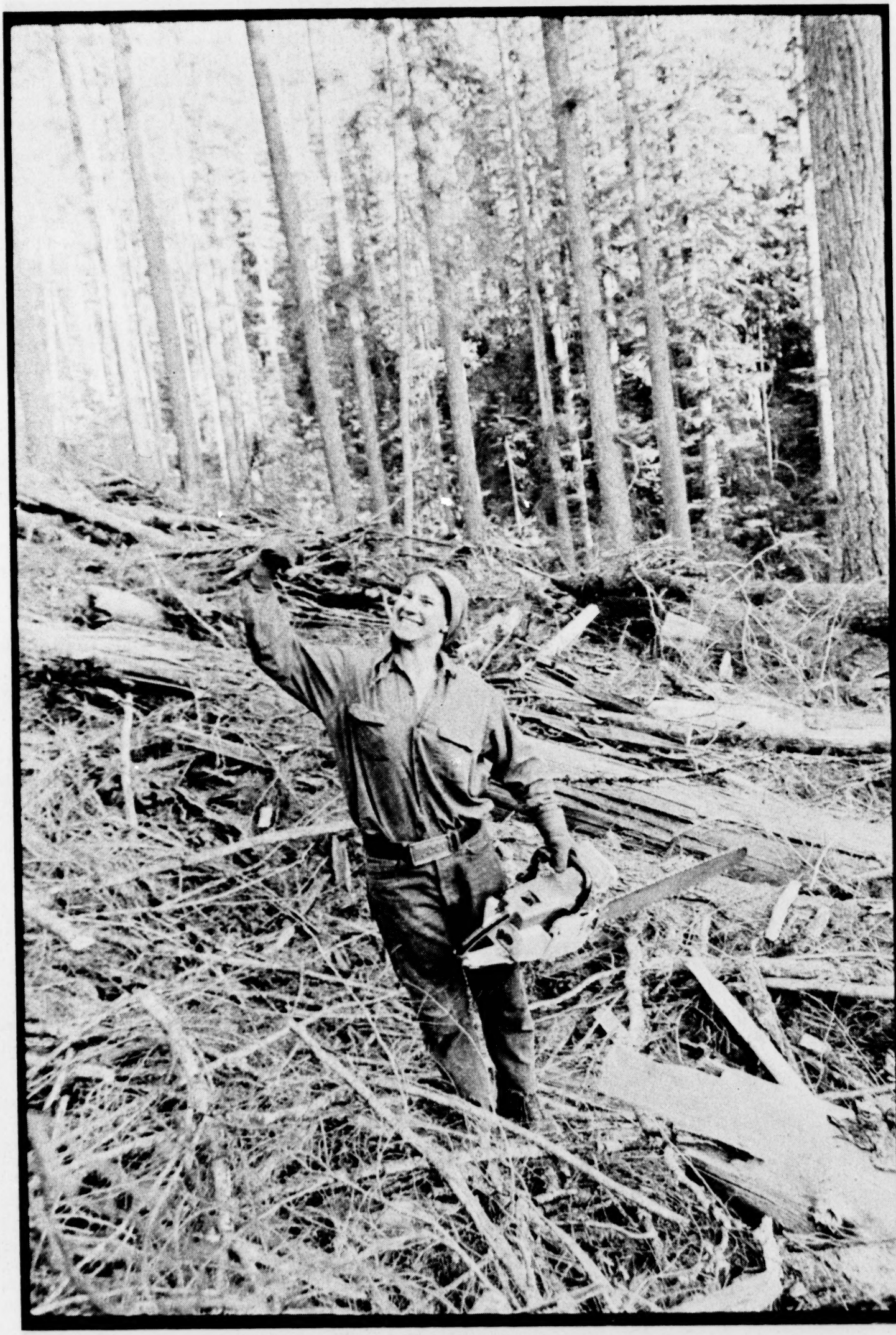
Besides, Vergons bore evidence of labor at the sort of undertaking for which hope is required. Hope, then, had returned. Ruins had been cleared away, dilapidated walls torn down and five houses restored. Now there were twenty-eight inhabitants, four of them young married couples. The new houses, freshly plastered, were surrounded by gardens where vegetables and flowers grew in orderly confusion, cabbages and roses, leeks and snapdragons, celery and anemones. It was now a village where one would like to live.

From that point I went on foot. The war just finished had not allowed the full blooming of life, but Lazarus was out of the tomb. On the lower slopes of the mountain I saw little fields of barley and rye; deep in that narrow valley the meadows were turning green.

It has taken only the eight years since then for the whole countryside to glow with health and prosperity. On the site of the ruins I had seen in 1913 now stand neat farms, cleanly plastered, testifying to a happy and comfortable life. The old streams, fed by the rains and snows that the forest conserves, are flowing again. Their waters have been channeled. On each farm, in groves of maples, fountain pools overflow on to carpets of fresh mint. Little by little the villages have been rebuilt. People from the plains, where land is costly, have settled here, bringing youth, motion, the spirit of adventure. Along the roads you meet hearty men and women, boys and girls who understand laughter and have recovered a taste for picnics. Counting the former population, unrecognizable now that they live in comfort, more than 10,000 people owe their happiness to Elzeard Bouffier.

When I reflect that one man, armed only with his own physical and moral resources, was able to cause this land of Canaan to spring from the wasteland, I am convinced that, in spite of everything, humanity is admirable. But when I compute the unfailing greatness of spirit and the tenacity of benevolence that it must have taken to achieve this result, I am taken with an immense respect for that old and unlearned peasant who was able to complete a work worthy of God.

Elzeard Bouffier died peacefully in 1947 at the hospice in Banon. ■



Paul Higgins

The Hoedads

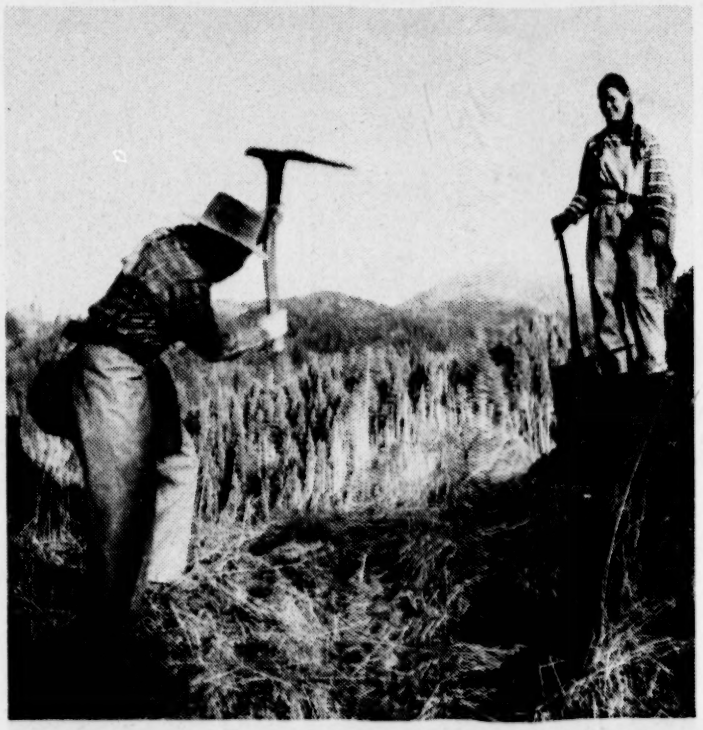
They have a legal, cooperative structure, their own credit union, a gypsy lifestyle, enough work to keep a little ways from foodstamps, no gurus, and a vision of a labor-intensive energy-efficient forest of the future.

BY J. D. SMITH

A Chinese fellow once said, in translation, that one process of revolution is the dialectic progression from mutual aid societies (neighbors putting up hay together), through the cooperative movement, the worker's collectives, the commune, to the community, in all its full-blown national importance. When the wheat farmer figures out that he doesn't need a business agent, and his friends are too busy to help, he builds up a farm coop, a storage elevator, and goes to talk to the bigtime millers as a group. This is a producers' cooperative, a good cheap way to buy gearlube in bulk, but mostly a marketing device.

The Hoedads are a two-hundred person membership cooperative involved in the business of reforestation. They are legal, in the state of Oregon, bondable, mobile, and able to work thinning, planting, tubing, or slashpiling for the United States Department of Agriculture, (the Forest Service. . . . a bunch of inattentive tree farmers selling wood four or five generations of tree away from what is being planted). The Hoedads take their name from the basic tree planting tool, a long hoe affair with a curved handle like on a carpenter's adze. Doesn't take much of a linguist to figure out why it is called a hoedad.

I'm not a Hoedad. The only tree I have planted since gradeschool Arbor Days was a three foot redwood the day after my daughter was born. I planted it under a PG&E powerline. Before you run off to become a Hoedad be advised that two hundred treeplanters in a work cooperative have some trouble keeping each other in work west of the Rockies. They don't need the membership, even though it costs a thousand bucks to be a member, taken out of wages in a three year period. In April of this year, the Hoedads had five hundred thousand dollars worth of work under contract, most of it in planting. That sounds like a lot of money until you divide it by two hundred, six



Bruce Piepenburg

Downswinging a hoedad

Patrick Plaia

The Cheap Thrills Crew

Bruce Piepenburg

Two bundles of young trees with mudball roots. Three hundred of these in a tree sack is a good load uphill.

months, and the fact that climbing around the mess the loggers leave, poking in a tree every ten feet, can be shitty hard work.

I first met a Hoedad in Idaho about two years ago. Idaho is where the Sierra Club is considered to be a bunch of Californians who live in big redwood houses and think that a tree screams when the chainsaw bites the bark. I was holed up at a hotsprings and working in a sawmill. The Hoedad hopped the rocks up a washed-out road beside the River of No Return, in a Japanese pickup truck, first rig to make it up the road that year. I baked the Hoedad a loaf of bread and stole her heart for awhile.

This Spring I met her again, this time in the Mountain Tavern in Tiller, Oregon. She was late, so I had plenty of time to belly up to the beer, taste the jukebox, shoot pool with a helicopter pilot, and listen to the bartender's takes of twenty hungry Hoedads ordering burgers: "Heck, I just got to where I'd hold the sandwich up, call out what was on it, and give it to the first person with the money. That much long hair I just can't keep track of."

I was counting the beans in a half a bowl of chili when a pair of hands went over my eyes. Hoedad women are broad in the shoulder and hard of palm; I knew the lady I was waiting for was in the bar with me. We drank a few beers together, held hands, and tried to short circuit a few years with our eyes. More

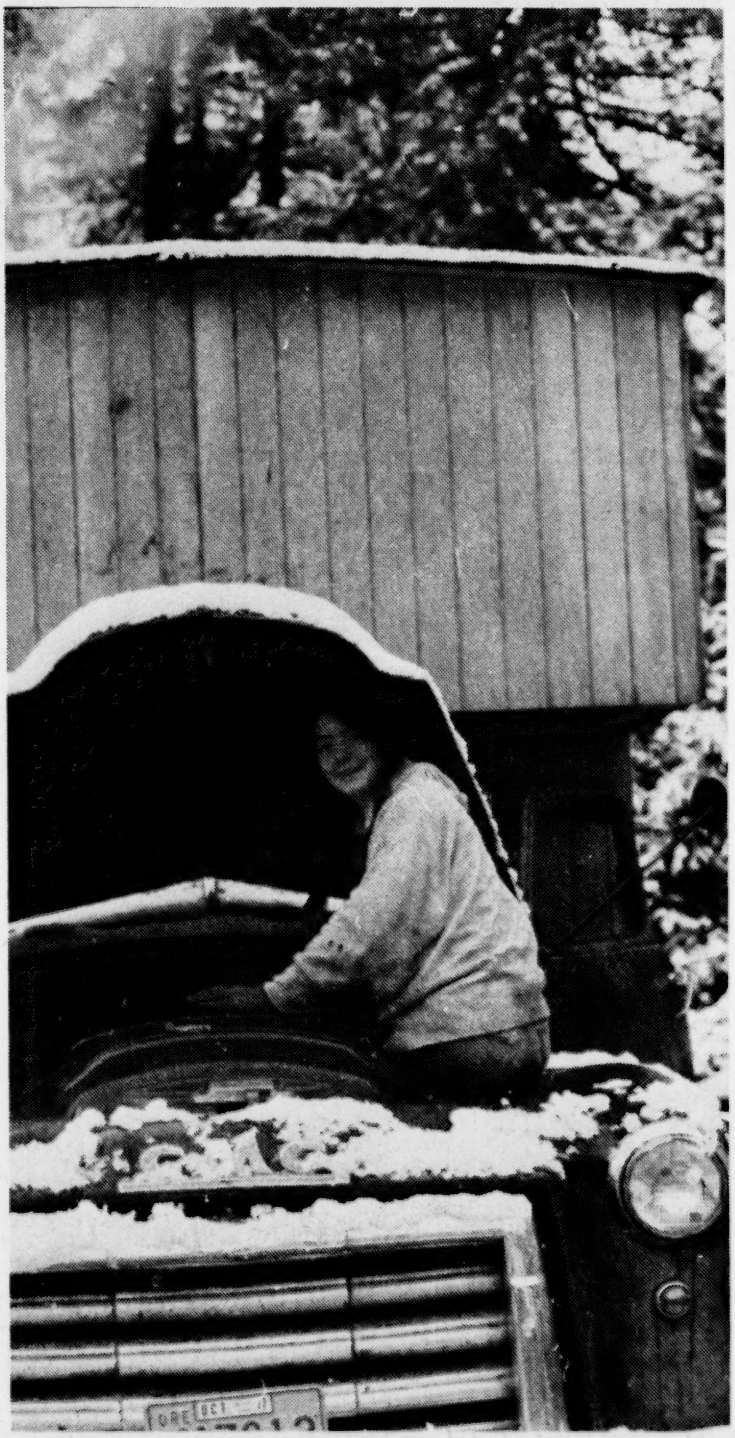
Hoedads started drifting in. Three crews were planting in that area. There was talk of hundred dollar days, sunny soft slopes where a planter could scalp away the overburden on the clearcut, poke the hoedad down into the dirt, fit in a young seedling (two or three years old), and toe the dirt back into place fast enough to make, by piecework, a hundred bucks a day. Fat city. I was buying drinks. We were in the Umpqua National Forest. They were camped six or eight miles up the creek. Did I want to go to camp?

THE CREW MEETING

A Hoedad camp smacks of the New Depression. This one belonging to the Cheap Thrills crew was on an old landing, where the trucks had come to get the butchered timber when it had been logged. There were a couple of nice big warm canvas and lath yurts, a smaller tent, a vintage house truck, and a few light travel trailers. We tiptoed across boards plunked down over the wet areas and snuggled into my Mama's quilts around the woodstove in the center of one of the yurts. Before sleep we talked of the dialectic, of the politics of doing what you mean to do, of the need for federations to supergroup the cooperatives in the northwestern part of Ecotopia, of the need for constant intention, which is to say: "Say what you mean, but mean what you say."

A little while before dawn I wandered outside to pee and waded into six inches of new wet snow. The Hoedads plant most of the winter in sloppy Oregon drizzle. Next to the hoedad and the tree sack, raingear is the important tool of a coastal reforester. You can't plant trees in snow, though, because you can't see where to put the trees. The Umpquas had us snowed out. There was a big temptation to go back and wake up the bartender. The Cheap Thrills folks called for a crew meeting instead, to discuss the issues that would be brought up at the General Meeting in Eugene.

The crew is the basic Hoedad family unit. Groups of fifteen to twenty people, the majority being men, travel, work and camp together. There are twelve



Bob Faus

Starting a housetruck in the snow

Lowell Rose

Cheap Thrills Yurts

or so crews with proud names like Red Star, Mud Sharks, Cougar Mountain, Cheap Thrills, Different Strokes, and TNT (Tobasco n' Tofu). The crew elects or appoints people to bid work through Hoedad Central (bondable), has its own treasurer, its own set of books, and is the initial resting place of the money from a contract. It pays, therefore, to have an interest in crew politics.

The meeting took place in the central yurt. We started by passing a long stemmed, heavy yet intricate pipe full of talk-and-stare weed. A chairperson was selected. Folks squatted in with their knees up around their ears and got down to business.

Did the Hoedads need a general store? There was a real need for a group-buying operation to supplement the existing quartermaster's function, but was a retail store worth the hassle? It was moved, seconded, and

Diana Fairbanks

Discussing the women's crew at the general meeting

unanimously decided that should a Hoedad General Store ever come about, it would be a workers' collective within a membership cooperative. These folks were serious.

What should happen to the Hoedad Generals' $70,000 cash reserve fund which the membership fees and administrative withholding had created? This was a tough one. Should it be used for a treeplanters' retirement parcel, Hoedad Acres, or loaned out to movement folks with no cash funds? Nothing was decided. Well enough should be left alone. It was nice and warm in the yurt. Let the cash reserve fund grow.

What about a womens' crew? Was it separatist and away from the move toward federation? A group of woman Hoedads wanted to try planting together, without the sexual competition and "you are so cute when you plant trees" bullshit that comes with almost any American work situation. There are about sixty woman Hoedads, some of them loners, some of them coupled up with men, but most of them workers in their own right. I watched men's eyes drift out into the snow and imagined that I was losing my old lady to a new misunderstood power. Wasn't it sexist to split off like this? Couldn't more women become Hoedads and go for gradual change within the cooperative? It was the old rub: as a woman you couldn't vote against a notion like this, and as a man you could vote either way. There were mostly men in the yurt. It was decided that the Cheap Thrills crew would support the womens' crew at the general meeting in Eugene, in a week. Could I come?

THE GENERAL MEETING

The WOW hall used to be owned by the Woodmen of the World. It was built in a time when the prime timber was still in the stump, before yarders and balloons and helicopter logging, when it still took labor to harvest the tree crops. The Hoedads had slushed some money into the hall to save it from burger kingdom and were now renting it for their quarterly meeting. It was a nice place, in downtown Eugene, with a Grange hall feeling. Outside twenty folks cooled their Vibrams and watched the traffic. A Spanish Civil War veteran with bushy eyebrows taped political messages to the powerpoles. One of them read like this:

On Lonelyness

As an idle man
I find too many
things to do,
that I have no time
to be lonely.
Besides, it would be
deadly
boring to me.

Starting a meeting on a sunny Sunday isn't a cinch. There was an oval of stiff chairs on the meeting floor, a bunch of risers along the side, and people spilled here and there. The president acted as chairperson. Should we read the old minutes or rely on memory? The legalists prevailed. If the old minutes were going to be adopted then they damn well should be read. Someone was sent crosstown to get them. It was a slow beginning in the right direction. Meeting was part of work. Criticism and self-criticism are parts of the dialectic. I was beginning to learn about movement.

Over the course of the next two days it became evident that the Hoedads are, as a group, involved in all phases of reforestation, and are expanding the definition of their work to the benefit, perhaps the radicalization, of the industry. Take herbicides for instance. The Forest Service contracts out work to chopper companies to spray 2, 4-D and 2-4, 5-T on recently logged areas to limit the broadleaf growth. These

Bruce Piepenburg

Overlooking a planting unit

chemicals are horribly close to Agent Orange, the defoliant used in Vietnam to uncover the Ho Chi Minh trail and ruin the agricultural base of the revolutionists. They cause birth defects. The Hoedads voted a thousand dollars for research into alternatives to spraying. They argue that with a little use of people the unwanted vegetation can be turned into energy, into wood alcohol or sheep fodder. Solve the problem with people, not poisons.

The tree crop has to be thinned, weeded, and the standard government method of doing this is to let a thinning contract, which is chainsaw work, just walking into the thick of it and knocking down everything but the strong plants, leaving the rest jackstrawed on the ground to rot into the forest floor. The Hoedads have begun to get thinning contracts. They talked of ways to utilize the slash, run portable stud mills, make two by fours out of the unwanted trees, and end up with a few houses out of each thinning contract.

Bob Fous

Rainy day discussion. Raincoats can be tools.

The question of the womens' crew was brought to the floor. A woman read the title poem from **Monster** by Robin Morgan. The shuffling began; the "tee hee" jokes sprinkled through the crowd. Some things aren't meant to be decided by two hundred people. The Hoedads compromised: if there were ever to be a new crew added to Hoedad Central, then it would be the Women's Crew. Meanwhile a crew of women were going to plant together anyway, just to see how it worked.

You can judge a political movement by its parties. There were five kegs of beer and two bands that night at the tree planters' boogydown. Somebody asked me if I was a CIA agent. Somebody else said that by writing about Hoedads I would bring government attention. (He was legal but a little underground.) The dancefloor was getting muddied up from the wafflesole mountain boots tracking in that part of Oregon. I had the feeling that two hundred active members is about as big as a cooperative can get and still have fun at a party. Somehow the rain and the beer were getting me down.

On the train back to California we passed a big derailment, with boxcars strewn out in a riverbed like the Lord had dropped his Mahjong set. I envisioned five hundred people picking up the pieces. In the Sacramento Valley I wondered whether farm workers might not do better as cooperatives than as unions, and who was in charge of naming race horses. In all I was convinced that the Hoedads had their shit together. They had a legal, cooperative structure, their own credit union, a gypsy lifestyle, enough work to keep a little ways from foodstamps, no gurus, and a vision of a labor-intensive, energy-efficient forest of the future. I wondered if they would ever become a collective. ■

The Oak Beams of New College, Oxford

A favorite story of Gregory Bateson's, he recently retold it to us over the phone. Oxford University was founded in the mid-12th Century, A.D.

"I owe this story to a man who was I think a New College student and was head of the Department of Medicine at the University of Hawaii, where he told it to me.

"New College, Oxford, is of rather late foundation, hence the name. It was probably founded around the late 16th Century. It has, like other colleges, a great dining hall with big oak beams across the top, yes? These might be eighteen inches square, twenty feet long.

"Some five to ten years ago, so I am told, some busy entomologist went up into the roof of the dining hall with a penknife and poked at the beams and found that they were full of beetles. This was reported to the College Council, who met in some dismay, because where would they get beams of that caliber nowadays?

"One of the Junior Fellows stuck his neck out and suggested that there might be on College lands some oak. These colleges are endowed with pieces of land scattered across the country. So they called in the College Forester, who of course had not been near the College itself for some years, and asked him about oaks.

"And he pulled his forelock and said, 'Well, ssirs, we was wonderin' when you'd be askin.'

"Upon further inquiry it was discovered that when the College was founded, a grove of oaks had been planted to replace the beams in the dining hall when they became beetly, because oak beams always become beetly in the end. This plan had been passed down from one Forester to the next for four hundred years. 'You don't cut them oaks. Them's for the College 'all.'

"A nice story. That's the way to run a culture."

Forest Farming

The essential tree library now includes **Tree Crops** *(EPILOG, p. 485) and* **Forest Farming.** *After these two books have been read, there is nothing to do but start working, experimenting, and writing your own local manual. A visionary integration of farming, animal husbandry, and horticulture with tree crops – fruit, nuts, oil, fodder. This is not a book on woodlots for maintaining firewood. Foreword by E. F. Schumacher.*

–Peter Warshall

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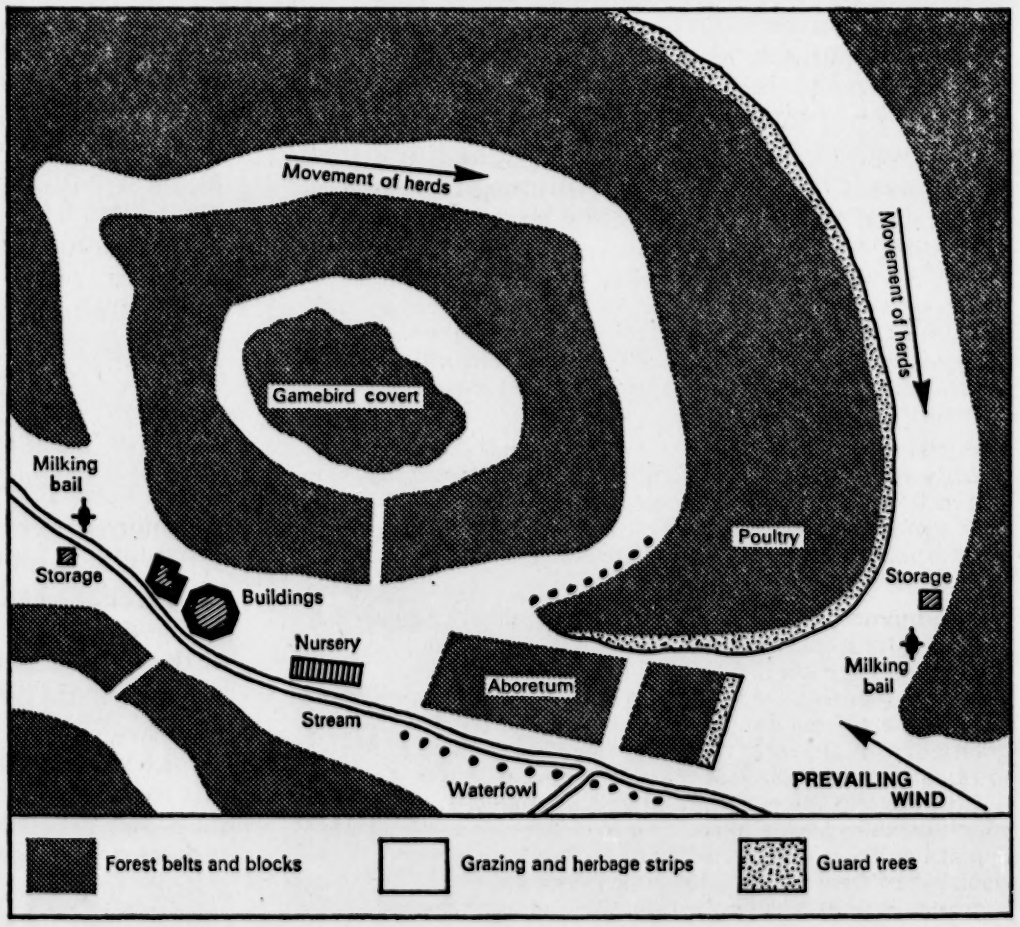
Of the world's surface, only eight to ten per cent is at present used for food production. Pioneer agriculturists and scientists have demonstrated the feasibility of growing food-yielding trees in the most unlikely locations – rocky mountainsides and deserts with an annual rainfall of only two to four inches. With the aid of trees, at least three quarters of the earth could supply human needs, not only of food but of clothing, fuel, shelter and other basic products. At the same time wild-life could be conserved, pollution decreased, and the beauty of many landscapes enhanced, with consequent moral, spiritual and cultural benefits.

Forest Farming
(Towards a Solution to Problems of World Hunger & Conservation)
J. Sholto Douglas & Robert A. de J. Hart
1976; 196pp.
$7.35 postpaid
from:
Watkins Publishing
45 Lower Belgrave St.
London SW1W OLT
England

FODDER TREES

JUJUBE (*Zizyphus jujuba*)

This tree is suited to dry areas, and bears fruit profusely. The seeds are large and the pulp surrounding them becomes farinaceous on drying, being utilised in parts of Africa and China for making porridge and bread. There are several varieties and propagation is by grafting or layering. The plant also acts as a host for the scale insects producing lac. *Z. jujuba* yields a valuable cereal substitute and owing to its ability to thrive in rather arid regions is of considerable economic importance. It belongs to the family Rhamnacae. The trees are small, of spreading habit and thorny, but it may be possible to select and multiply thornless stock.



A typical layout with supporting facilities

Meka Wawona under a redwood that has since been cut down to make room for young trees.

California's reforestation project

The success of the Hoedads inspired a rural Californian, Meka Wawona, to draw up a similar reforestation project for the State of California. She said she had no income for six months while drafting the proposal but friends supported her. The Project is now contracted by the State with an administrating organization, the Center for Education and Manpower Resources in Ukiah, California. Being a public works program, the jobs are only temporary. But they focus heavily on training so that "graduates" can go into business for themselves, contracting with the forest industry and the government.

The initial funds were $200,000 from the Employment Development Department, an agency which has begun to provide capital for new community-based enterprises. Then came some money from the California Governor's Discretionary Fund because an interest was there for entrepreneurship programs.

The first work camp is now in operation in Mendocino County with twenty-some coed workers. Although they are still in training and will not be accepting contracts for at least a month, they are already considered a model for rural aspects of the forthcoming public workforce, the California Conservation Corps.

In two months, the crew has solidified against forest service and industry practices, believing instead in the labor-intensive techniques they are learning. These include thinning, planting seedlings, planting seeds, erosion control, and stream rebuilding. The last three are necessary because of current forestry practices of bulldozing forests and cutting trees too young to reseed themselves. But the main passion of the new crew is old trees and the government's "sustained growth" policy, which encourages the harvesting of old stands of trees. No one as yet has brought suit based on the Mongahella Decision of December 1975, which declared clear cutting on National Forests against the law. But it continues in the Northwest. The issue will soon be brought to trial in the Congress, where opposing bills have been introduced: Jennings-Randolph's of West Virginia, would discontinue clear-cutting and is a current focus of environmental lobbyists. Hubert Humphrey's bill, backed by industry and the Forest Service, would allow the practice.*

People in the Forest Service wonder if labor-intensive techniques will develop enough in demand to provide the future jobs predicted by the Reforestation program. Automation is cheaper. Nevertheless, the crew has been offered a contract with the Forest Advisor to demonstrate on test sites their own labor, which will then be compared to that of machines. (John Henry lives.) A top Forestry bureaucrat admitted, "A large labor force employing exotic forestation techniques would probably double the growth rate."

The goals of Reforestation center on future jobs for the community. The program includes training in small business management. Trees thinned or pulled from log jams are the property of the worker. The small logs can be sold locally for pole beam construction. Ideally that might become a cottage industry. Also, ideally, they would like to have use of the railroad freight system to make hauling and selling commercial sized logs economically feasible. Meka had written into her proposal that the forests be used more for recreation, and that reforestation become a recreational activity, taught at campgrounds by some of the crew.

—Rosemary Menninger

**As an old logger, it's my understanding that Douglas Fir (at least) doesn't grow back so well unless it's clear cut. Who's got the data? I don't trust most environmentalists any more than I do most logging companies in matters like this. —SB*

Agricultural Involution

This tells the story of the decline of swidden — an ingenious but delicate, labor-intensive system of tree clearing and burning, then crop cultivation, then reforestation. It failed in Indonesia because the slow growth it demands was too slow for the flood of new population. The book could be used as a case either for the doom of or the promise of labor-intensive techniques in American forests.

—Rosemary Menninger

According to analysis by Roy Rappaport in the special Scientific American *issue on "Energy" a couple years ago, swidden agriculture is the most energy-efficient in the world.*

—SB

Agricultural Involution
(The Processes of Ecological Change in Indonesia)
Clifford Geertz
1963; 170pp.
$3.25 postpaid

from:
University of California Press
2223 Fulton Street
Berkeley, CA 94720
or Whole Earth

A significant proportion of the mineral energy upon which swidden cultivates, and especially the grains, draw for their growth comes from the ash remains of the fired forest, rather than from the soil as such, so that the completeness with which a plot is burnt is a crucial factor in determining its yield, a fact of which probably all swidden cultivators are aware.

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In a swidden the jungle canopy is radically lowered, but much of its umbrella-like continuity is maintained, in part by planting cultigens not in an open field, crop-row manner, but helter-skelter in a tightly woven, dense botanical fabric, in part by planting shrub and tree crops of various sorts (coconuts, areca, jakfruit, banan, papaya, and today in more commercial areas rubber, pepper, abaca, and coffee), and in part by leaving some trees standing. In such a way, excessive exposure of the soil to rain and sun is minimized and weeding, exhausting task in any case, is brought within reasonable proportions because light penetration to the floor is kept down to a much lower level than in an open-field system.

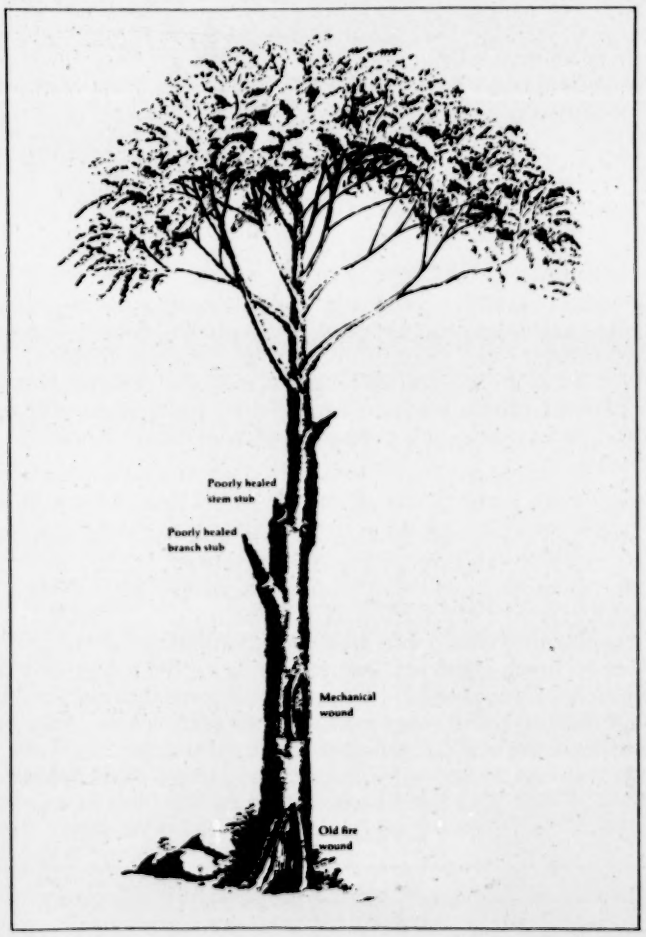
A Tree Hurts, Too

The Life and Death of Trees. Their wounds and how they tend them. A story book in pictures of the hurts and healing powers of the plant kingdom's finest. —*Peter Warshall*

With this lovely color booklet and the Tree Surgery one: instant Ecotopian. —*SB*

A Tree Hurts, Too
Forest Service USDA
28 pp.
$1.30 postpaid

from:
Supt. of Documents
Government Printing Office
Washington, DC 20402



Yet a major cause of DEFECT, DEATH, and DECAY of all species of trees throughout the world is infection of WOUNDS by microorganisms.

Wood . . . Colors and Kinds

Sorting through used lumber? Unable to tell if it's Red Oak or Black Tupelo? This is the pamphlet you want. Beautiful color pictures: end-grained, edge-grained and flat-grained views. —*Peter Warshall*

Wood . . . Colors and Kinds
(Ag Handbook No. 101)
1956; 36pp.
$ .95 postpaid

from:
Supt. of Documents
Govt. Printing Office
Washington, DC 20402

More on hops

"One can easily graft a stem of hops onto the root of the marijuana plant. The plant grows as hops but has all the potency of marijuana . . . ."

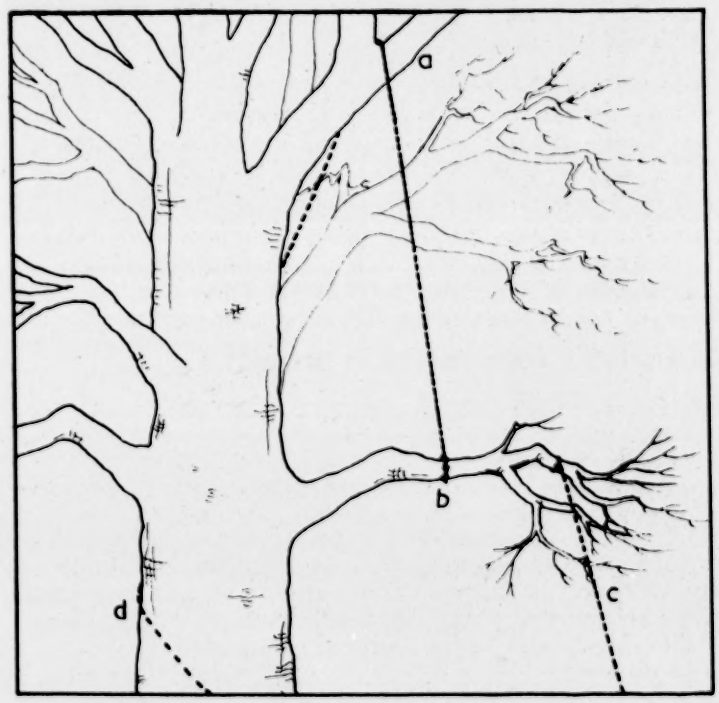
So wrote a reader in the Fall '75 CQ, *adding that hops vines were almost impossible to buy. Peter Warshall told him of one source in Berkeley. Here's another, sent by John Cowden, Trumansburg, NY.* —*SB*

Mellinger's Inc.
2310 West South Range
North Lima, Ohio 44452

Tree Surgery

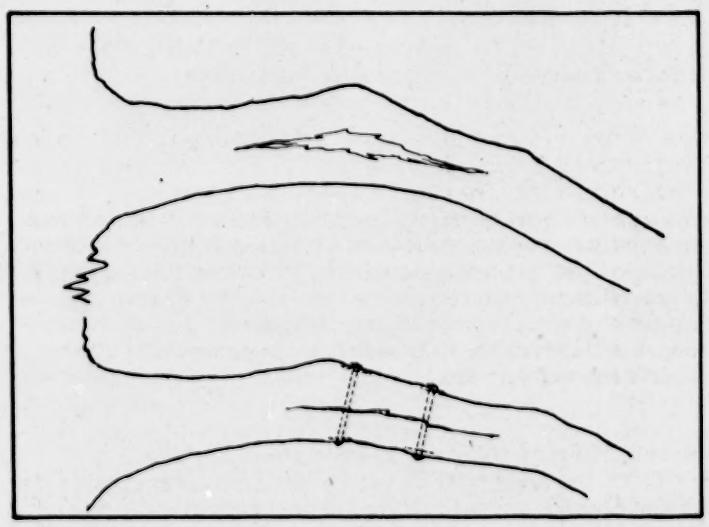
I wonder how many of The CQ *readership wish to become tree doctors. All of you will need this book — it's competent, thorough, and unusually clear.* —*SB*

Tree Surgery
P. H. Bridgeman
1976; 139pp.
$12.95 postpaid
from:
David & Charles
North Pomfret, VT 05053
or Whole Earth



Roping branches

a. Strong anchor point; b. Timber hitch at balance point; c. Pull-off rope; d. Branch rope securely anchored.



Tie-rod through split branch.

ENVIRONMENTAL IMPACT REPORTS (E.I.R.'s)

by Peter Warshall

On New Year's Day, 1970, President Nixon signed the National Environmental Policy Act. Among its provisions was Section 102(C) – a section that innocently stated that every Federal agency must include a detailed report of any environmental impact of any project the agency was undertaking. Nixon was concerned with another section of the Bill (which created the Council on Environmental Quality). He never expressed an opinion on Section 102.

Today, both State and Federal Environmental Impact Reports are the heaviest political, educational and, in many ways, religious tools of the American citizen. Politically, the EIR forces humans to consider the consequences of their acts. You can't shoot buffalo or sell redwoods to Japan without stating the social and economic impact of human life on the natural world. The EIR has stopped the Kapairowets Power Complex by simply making the Industrial Consortium aware of all the side-effects of coal mining in southern Utah. The EIR stopped Warm Springs Dam in California by taking the Army Corps of Engineers to court. And, even when projects were not stopped, the EIR put rational ecological guidelines on what could have been a "waste the Earth" devastation (e.g., Alaska Pipeline).

Educationally, the EIR has melded science and the citizen. Scientists are tested for honesty and thoroughness by non-academic naturalists and planners. Citizens have plunged into the subtle realities on scientific thought ("carrying capacity," "indirect and direct impacts on food chains," etc.). The result: by far the most refreshing rhetoric and dialog in contemporary America. A dialog where words have meaning, are connected to Land and Sea, and, when effective, give that special good feeling that comes in aiding a forest or river or mammal or bird.

Environmental Impact Review

Ruthann Corwin
1973; 50pp.

c/o 448 Pitzer Ct.
Santa Barbara, CA 93017

Environmental Impact Review is essentially Out of Print. Ruth Corwin is trying to get it reprinted. Please send her a postcard and first writers will get copies. Late comers will go on a list. Another book that is "action" oriented is: Environmental Impact Handbook by Robert Burchell, David Liftokin, et. al., Center for Urban Policy Research, Rutgers State University, New Brunswick, NJ.

—PW

Environmental Impact Assessment

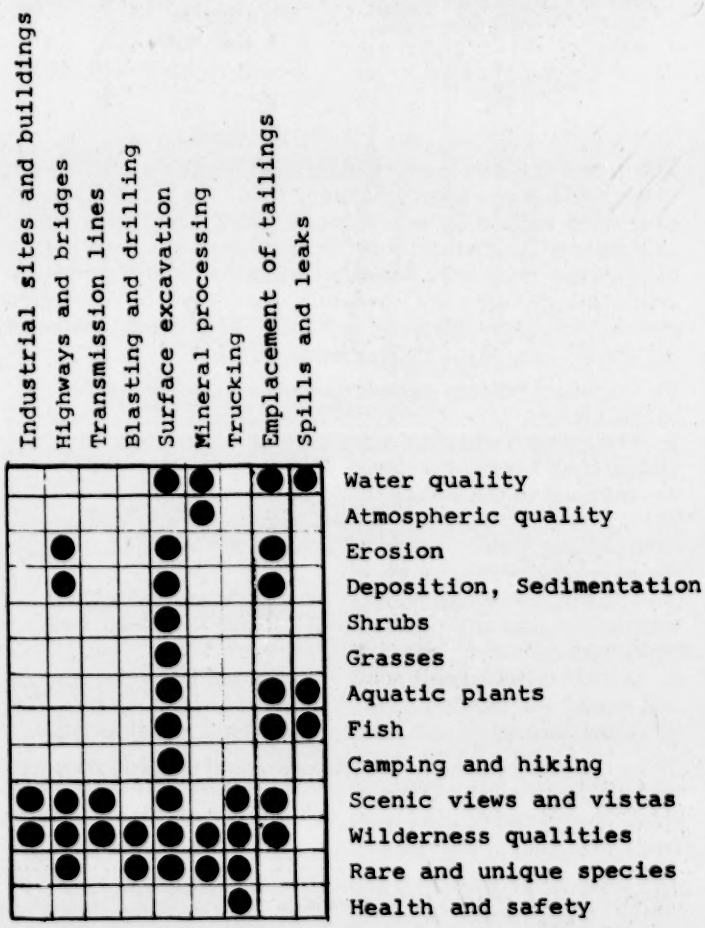
Heffernan, Corwin, Eds.
1975; 267pp.
$12.30 postpaid

from:
Freeman, Cooper & Co.
1736 Stockton Street
San Francisco, CA 94133
or Whole Earth

These books are academic-prose with a strong California bias. **Environmental Impact Review** *is short and clear. A fine introduction with very good references. Starts with the legal definition of "environment," talks to EIR content and ends with personal involvement. For Fed and California EIRs.* **Environmental Impact Assessment** *is a mixed bag. Exactly half the chapters (4 or 8) are worth it. "The Practical Appendix" and Johnston's Essay "Assessing Social and Economic Impacts" are the most useful tools to present-day EIR writing I know.*

It is hard to draw the distinction between talking about nature and talking about people when your goals, according to the policy declaration of NEPA(National Environmental Policy Act), are to "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings" and to "maintain, wherever possible, an environment which supports diversity and variety of individual choices" (Section 101(b(2) and (4))... . Wisconsin includes consideration of population distribution or concentration and effects upon public services. Wisconsin's Department of Natural Resources Guidelines for the Environmental Policy Act define environment as "the totality of conditions and influences, both natural and man-made, which surround and affect all organisms, including man." Montana construes "human environment" to include *not only* social, economic, cultural, and aesthetic factors, but also the biophysical properties of natural ecosystems. Montana thus reverses the emphasis of those who would limit environmental consideration to only the biophysical environment. Florida's Environmental Land and Water Management Act requires a report including impacts on the economy, public facilities, public transportation, and housing, as well as on the environment and natural resources of the region.

Environmental Impact Assessment



Reduced matrix for a phosphate mining lease

Environmental Impact Review

E.I.R.'s now international

In October, 1975, a U.S. District Court in Washington, D.C. made a far-reaching legal decision. It held that any project supported by U.S. funds could not harm the social life and environment of any country. Up to this point, it was thought that an EIR review was restricted to the USA. Now, projects like the Pan American Highway, which was destroying the life of the Cuna and Choco Indians at Darien Gap, cannot happen without careful review. This gives the U.S. citizen a chance to participate directly in U.S. foreign affairs. Too bad an EIR challenge was not tried during the Vietnam War. Write Sierra Club, National Audobon, and the International Association of Game, Fish and Conservation Commissioners for further details.

—Peter Warshall

Fish ponds on sand

For me the hottest item in the new (1976) **Journal of the New Alchemists** *is a brief article on gley, an organic method of sealing ponds that can replace all those hassles with Bentonite clay, concrete, or polyethylene. On a large scale it could open up desert areas to aquaculture. The guts of the article are excerpted below. You may want the new issue of the* **Journal** *– sophistication grows apace at New Alchemy on windmills, composting, fish farming, midge culture, and especially etc.*

–SB

Journal of the New Alchemists
1976; 128pp.
$6.00 postpaid
from:
The New Alchemy Institute
P.O. Box 432
Woods Hole, MA 02543

The technique does not originate with us, but is of Russian origin and has not been well publicized. We became aware of it when Marsha Zilles of Santa Barbara, California, sent us a copy of an abstract from an architectural design journal briefly describing how Soviet scientists had sealed ponds by artificially inducing the formation of a "gley" or "biological plastic," as occurs naturally in bogs. The process, as adapted for use in Costa Rica, proceeded as follows:

1. The pond bottom was completely cleared of debris, rocks, etc.
2. The bottom and sides were covered completely with wastes from nearby hog pens. Care was taken to apply the material to the vertical sides of the pond as well as to the bottom. This layer and each subsequent layer of material was added in quantities sufficient to just cover the previous layer.
3. The hog pen waste was completely covered with freshly cut grass and banana leaves, plus a few discarded cardboard cartons.
4. A third layer, of soil taken from near the pond site, was added and tamped down firmly.
5. After between 2 and 3 weeks, the pond was flooded.

The pond retained water immediately upon filling, with no leakage whatsoever. The cost of sealing was limited to labor costs; the materials used were all "wastes" which would have been discarded in the course of normal farm operations.

The process involved in forming the seal is a bacterial one, which requires anaerobic conditions. It is possible that plastic and rubber pond liners actually act in the same way. While great care is taken to prevent punctures in the installation of such liners, it may be that their long-term effectiveness is, in fact, a result of the creation of anaerobic conditions underneath the liner. The suggestion is that a variety of waste materials, if properly applied, would seal porous soils, thus enabling the Russian method to be adapted for use practically anywhere.

Ponds for Water Supply and Recreation

For anyone considering an embankment pond or an excavated pond with dams less than 25 feet high. This is the best on site studies, estimating runoff, engineering, sealing pond bottoms, etc.

–Peter Warshall

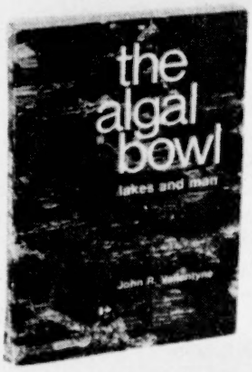
Ponds for Water Supply and Recreation
AG Handbook No. 387
Soil Conservation Service
USDA

$1.25 postpaid
from:
Supt. of Documents
Govt. Printing Office
Washington, D.C. 20402

The Algal Bowl

Learned writing. Vallentyne has a beautiful intimacy with lakes (how they layer and mix; how they support life and death) and humans (their attempts to live harmoniously with Lake Zurich and Lake Erie; their infatuation with Tide and the other detergents). I cannot think of a better integrated view of natural and human history.

–Peter Warshall



The Algal Bowl
(Lakes and Man)
John R. Vallentyne
1974; 186pp.
$3.60 postpaid
from:
Information Canada
Ottawa, K1A OS9
Canada

Why do so many humans disapprove of abortion early in pregnancy when the fetus is incapable of an independent life? Why does the U.S. Congress typically vote more money each year for cancer research than the Department of Health, Education and Welfare requests? Why are defense budgets so high in many countries? Why do we fear death?

There can be only one answer to these complex questions. We do these things rationally or irrationally, rightly or wrongly, because we connect them with our survival. They are the products of hidden forces within us that we can neither fully comprehend nor control, biological forces that under more primitive conditions of life helped our ancestors to survive. The problem now is that under modern and improved conditions of life these deep-rooted instincts are returning to threaten our existence with runaway population and technological growth. Our innate biological drive for survival is impairing our ability to survive.

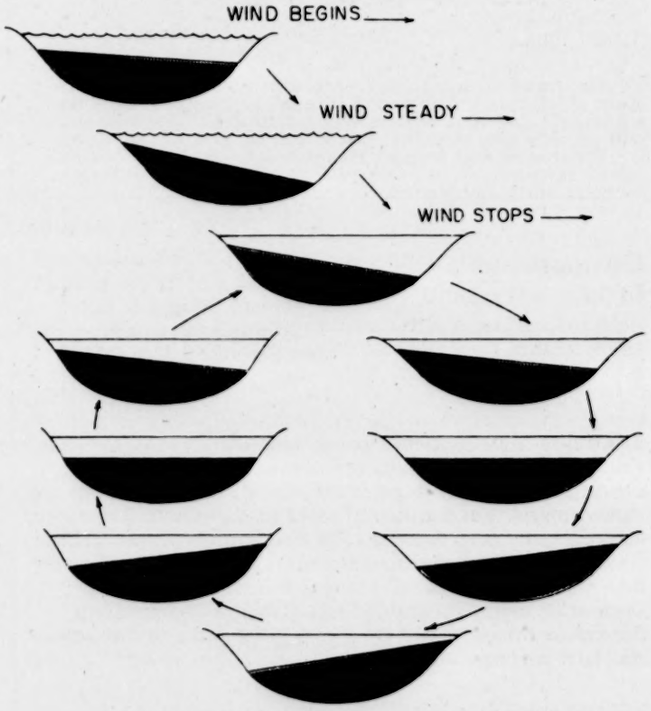


Diagram showing motions of an internal seiche in a lake following a steady wind. The clear upper layer represents the epilimnion and the lower stippled area, the hypolimnion. Note that the slope of the interface between the two water masses rises upwind when the wind is blowing.

United Stand Privy Booklet

United Stand is a bunch of strong, persevering Northern California land people. Their vision is to change the building codes to permit rural homes and sanitation to become more harmonious and "in touch" with their landscape. They are low-tech and smart. This booklet has the basics on compost privies, pit privies, and grey water systems. It is a working booklet that will change and fill out as we all learn more.

Here are the drawings of Drum Compost Privies from the Paradise Valley Land Trust (also in Northern California.) They are the best (ne'er an odor) and cheapest I have encountered. To prevent overloading, just have more fixed-up drums handy. The obvious Ben Franklin design compared to the Clivus Cadillac.

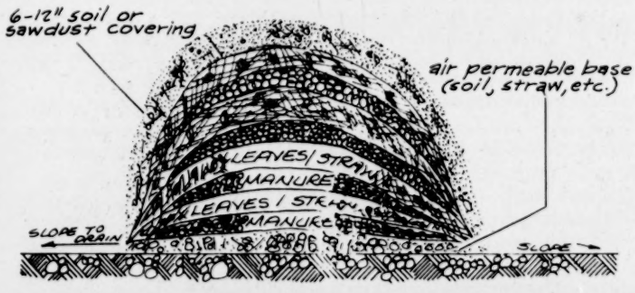
Final news: More grey water info can now be found in the revised edition of Septic Tank Practices *($3 from Peter Warshall, Box 42, Elm Road, Bolinas, CA 94924).*

—Peter Warshall

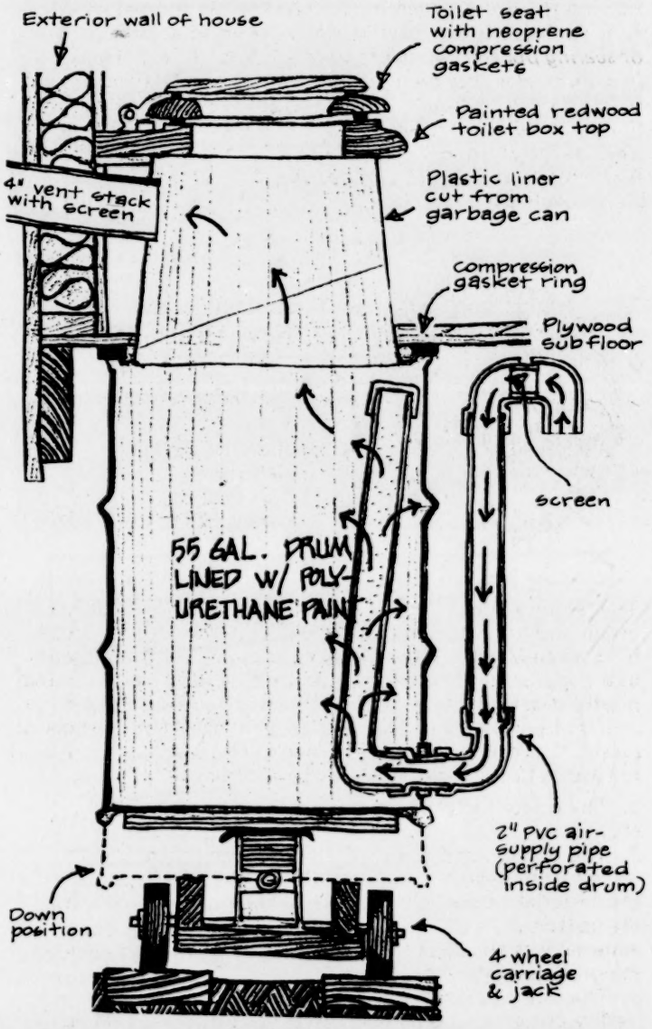
United Stand
Privy Booklet
(And Greywater Systems)
15pp.
$1.00 postpaid

from:
United Stand
P.O. Box 191
Potter Valley, CA 95469

LAYERED COMPOST PILE
(30-40 days or as temperature indicates)



SECTION SHOWING DRUM IN USE


Exterior wall of house
Toilet seat with neoprene compression gasket
Painted redwood toilet box top
4" vent stack with screen
Plastic liner cut from garbage can
Compression gasket ring
Plywood subfloor
screen
55 GAL. DRUM LINED W/ POLY-URETHANE PAINT
2" PVC air-supply pipe (perforated inside drum)
Down position
4 wheel carriage & jack

Save Your Own Seed

Hills is one of the greatest horticultural writers in the world. Here he concentrates plant by plant on a topic most gardening books leave out.

—Rosemary Menninger

Save Your Own Seed
Lawrence D. Hills
1975; 46pp.
$1.50 postpaid

from:
The Henry Doubleday Research Association
Bocking, Braintree
Essex, England

Pumpkin seed, like marrow seed, improves with age up to seven years and old seed is reputed to produce plants with a higher proportion of female flowers. This makes it possible to enjoy the offspring of a good plant over a long period, and to compare improved varieties with the old standard. . . . It would be a useful and interesting hobby for someone with a large greenhouse or large garden and plenty of time, to breed pumpkins as though they were cucumbers, adding melon blood for flavour (also 24 Chromosomes) and aiming for maximum crop and high dry matter.

•

The kale problem is that these are now as rare as the oryx or the Hawaian goose and many have joined the dodo in extinction. The world's gene pool has lost the qualities that it may well need to breed a "superkale," which would blend attractive flavour with high Vitamin A and Vitamin C, plus resistance to both clubroot and to wood pigeons. We need a campaign by Friends of the Earth to "Save the Kale," for this could be more important to a vegetarian world than either whales, or lost botanical treasures.

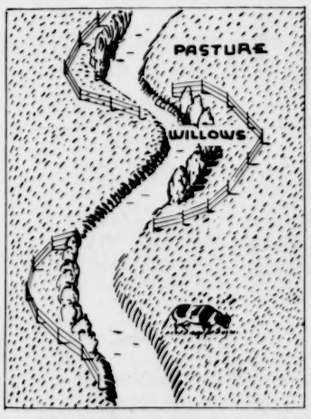
Making Land Produce Useful Wildlife

A great starter pamphlet. A must for every country folk. A fine companion to The Earth Manual *(CQ, Spring '76, p. 94).*

—Peter Warshall

Making Land Produce Useful Wildlife
Farmer's Bulletin No. 2035
$ .35 postpaid

from:
Supt. of Documents
Govt. Printing Office
Washington, D.C. 20402



How to protect streams having deep water and high banks.

How to protect streams having shallow water and low banks.

Soft Technology

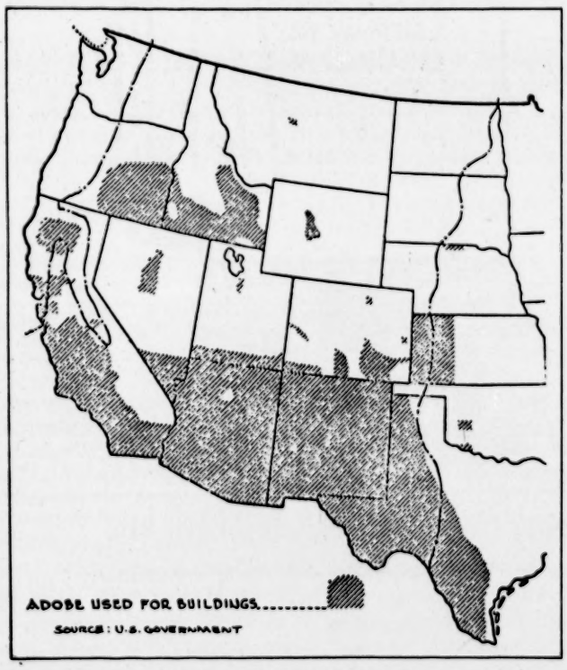
Adobe News

Adobe is one of the best ways to build if you live where it is practical to do so. Not only is it esthetically pleasing, it makes use of local materials and is thus a fine example of resource-conservation. There's a bonus too: adobe lends itself well to "passive" solar heating and cooling schemes. (You use the house as both collector and storage instead of a mess of hardware.) Of course, there are books on the subject (CATALOG & EPILOG, pp. 102, 515) but the best way I know of to get a feel for the possibilities is to read this nifty paper. The articles treat both tradition and the experimental new with some of the most friendly real-people reporting I've seen.

—J. Baldwin
[Suggested by Jon Davis]

Adobe News
$5.00/year (6 issues)
$1.00/ single issue

from:
Adobe News
P.O. Box 702
Los Lunas, NM 87031



The warmth of adobe can be greatly enhanced by using a method of sealing interior walls which leaves the individual bricks visible while keeping them dust free. My husband devised an inexpensive easy method while building our house in Placitas. After laying the adobes one at a time ourselves we wanted to be able to see them on the inside instead of plastering over them.

The first step is to go over the walls with a claw hammer and define each brick by removing excess mortar. As you scrape, you also fill any gouges with mud. Then, go over the walls with a wet whitewash brush, brushing vigorously to smooth the surface and seal cracks and holes. On bricks which are sandy, this is all that need be done at first. However, our bricks had a high clay content and we found that they cracked badly after being brushed and dried. We found that adding a small amount of cement to the water being used to brush the walls cured the problem, while not enough cement need be used that it changed the natural color. The cement is not necessary if the bricks are sandy.

When the walls are thoroughly dry, we used a coat of an inexpensive logwood oil to seal them. The higher refined, more expensive oil will soak in rather than seal over the adobes and should not be used. We chose to leave the bricks their natural color, but should you prefer white or any other color walls, you can paint over them with any oil based paint.

Mud, Space & Spirit

There's a new book on Adobe too, a beautiful one involved with the idea of adobe. It's a good place to start if you're considering earthen construction.

—J. Baldwin

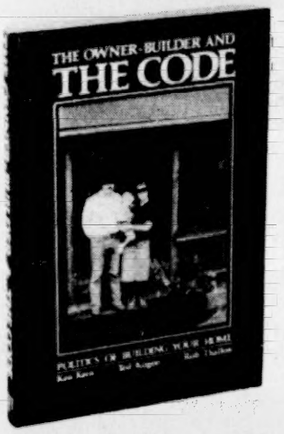
Mud, Space & Spirit
Virginia Gray,
Alan Macrae and
Wayne McCall
1976; 95pp.
$7.95 postpaid
from:
Capra Press
631 State Street
Santa Barbara,
CA 93101
or Whole Earth

Certain processes and stages of adobe work have become associated exclusively with women. To the *enjarradora*, broadly "plasteress" in English, belong the final phases of construction, the finishing. The *enjarradora* gives the whole architecture its final shape, color and detail.

The Code

*When push comes to shove, the Big Problem with building your own home is usually something to do with getting the abode of your desires past the building inspector. This is even more of a problem if you are not quite the sort of folks the local folks are used to. What do you do? This handbook of case histories and strategy is by none other than that old master Ken Kern (***The Owner-Built Home***, CATALOG p.94) and friends. It's about as good a source of information as one could hope for. Whether your inclination is compliance or defiance, you'd best give this a look.*

—J. Baldwin



The Owner-Builder and The Code
(Politics of Building Your Home)
Ken Kern, Ted Kogon, Rob Thallon
1976; 182pp
$5.00 postpaid
from:
Owner Built Publications
P.O. Box 550
Oakhurst, CA 93644

In these times of "energy crisis," the Uniform Building Code (Sec. 1410) and the Uniform Housing Code (Sec. H701a) require "heating facilities capable of maintaining a room temperature of 70 degrees F. at a point 3 feet above the floor in all habitable rooms." This clause excludes wood heating as an adequate method because, in the words of one building official, ". . . a BTU rating cannot be established for wood heat."

Rural owner-builders employ wood heaters as their *only* source of heat, and for this they are often held in violation by building inspectors. Wood is a readily available fuel in many rural environments, and its utilization does not contribute to the depletion of fossil fuels. Indeed, much available country land has already been logged by timber companies and the remaining fire-hazardous slash provides fine wood heat. Instead of being commended for using a resourceful alternative to consumptive heating devices or for clearing slash, owner-builders may find abatement proceedings against their houses for "lack of adequate heating facilities."

WARNING
THE STATE ARCHITECT HAS DETERMINED THAT THIS BUILDING IS STRUCTURALLY UNSAFE. PERSONS ENTERING THIS BUILDING DO SO AT THEIR OWN RISK.
TELEVISION FACILITIES TO PERMIT PUBLIC VIEWING OF LEGISLATIVE PROCEEDINGS ARE AVAILABLE IN ROOMS 4202 AND 4203 OF THE EAST WING OF THE CAPITOL.

Anon Forrest of United Stand frowns at a sign on the entrance door to the California State Capitol Building. A government building not up to code can get by with an "Enter at Your Own Risk" sign. Why not an owner-built home? California newspapers flippantly treated Jerry Brown's support of United Stand issues as "the governor coming out for outhouses." But, for the United Stand delegates, Brown's responsiveness helped restore their faith in government.

•

Uniform codes for all is a myth, for circumstances are rarely uniform. Codes are no more egalitarian than tax laws. They tell you what you must do, not what you can't. This precludes creative alternatives to the given, "uniform" model. As one owner-builder explained to a rural Grand Jury when testifying why he is an "outlaw" builder: "I never bought a permit, because there weren't any for sale for what I wanted to do!"

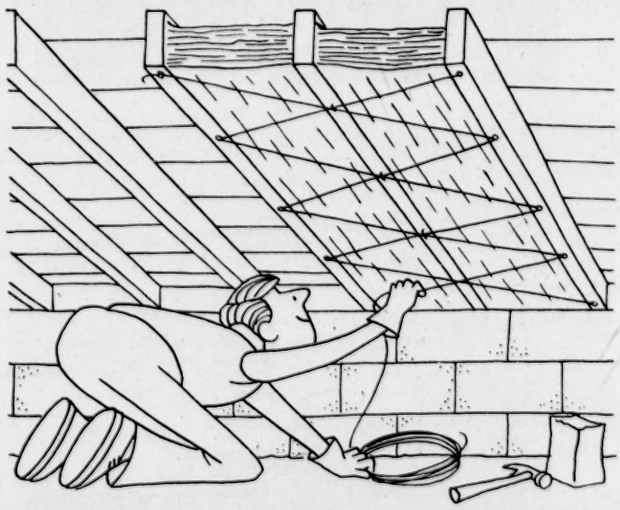
Energy saving

Lotta books on this subject these days, many overpriced. Here's two priced fairly. The pamphlet will get you started; the fat one will tell you enough to actually do the deed or hire a contractor confidently. It's prepared by the Office of Policy Development and Research, Division of Energy, Building Technology, and Standards, U.S. Department of Housing and Urban Development, better known as HUD. How's that for bureaucracy? Though this book is OK, I personally find the compartmentalization of knowledge and responsibility (response-ability) by our government rather creepy. It makes it virtually impossible for citizens to get into the act at a level below large corporate.

—J. Baldwin

How To Save Money By Insulating Your Home
23 pp.
$ .30 postpaid (they have bulk rates too, and other more detailed publications available)
from:
National Mineral Wool Insulation Association, Inc.
328 Springfield Ave.
Summit, NJ 07901

In The Bank or Up The Chimney?
HUD
73 pp.
$1.95 postpaid
from:
Chilton Book Co.
Chilton Way
Radnor, PA 19089
or Whole Earth



To insulate floors above cold spaces, push the batts or blankets between the floor joists from below, vapor barriers up. To support the insulation, lace wire back and forth among nails spaced about 2 feet apart in the bottoms of the joists. Pieces of blanket cut to size should be fitted, vapor barriers in, along the sill at the ends of the floor area.

—How to Save Money by Insulating Your Home

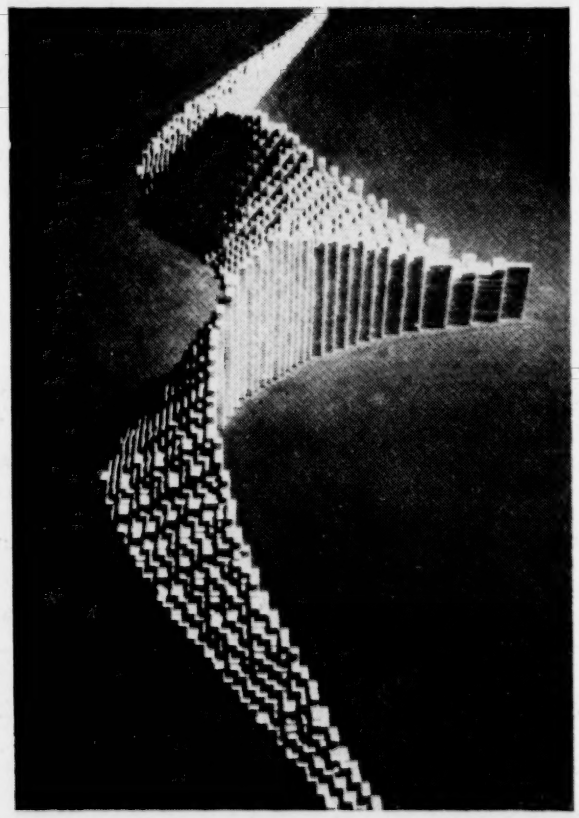
Energy and Form

This is not a casual environmentalist's workbook. Problems such as "how are we going to house our doubled population due in 35 years?" are dealt with. Mr. Knowles performs a remarkable analysis of the solar energy flows in Pueblos as a demonstration of what might be expected if such factors were considered in the design of buildings. He suggests that if the energy flows of an entire area were known, then it would be possible to design structures and urban layouts that would take advantage of them. He presents a detailed study of California's Owens Valley as an example. This amounts to a wider view of architecture and planning than has usually been the case. It seems to me that it is also a necessary view. Mr. Knowles is one of the forces pushing architecture into new territory.

—J. Baldwin

Energy and Form
(An Ecological Approach to Urban Growth)
Ralph L. Knowles
1974; 198pp.
$27.50 postpaid

from:
The MIT Press
28 Carleton Street
Cambridge, MA 02142
or Whole Earth



Pueblo Bonito in Chaco Canyon, New Mexico, as it was unearthed by N. M. Judd during seven National Geographic Society expeditions, 1921 - 1927.

Winona — towards an energy conserving community

Not content with the success of the truly pioneering Ouroboros project (EPILOG, p. 534) Dennis Holloway leads his students in a study of what could be accomplished if the Ouroboros learnings were applied to a typical full-sized community. It's all proposal at this time, but it sure sounds exciting. Based on past performance, I'd say these people are among the few well worth watching as they test the fences of what's possible.

—J. Baldwin

Winona
Dennis Holloway and students
Huldah Curl, ed.
1975; 122pp.
$5.00 postpaid

from:
Publications: Winona
University of Minnesota
2818 Como Ave. SE
Minneapolis, MN 55414

Good Shelter

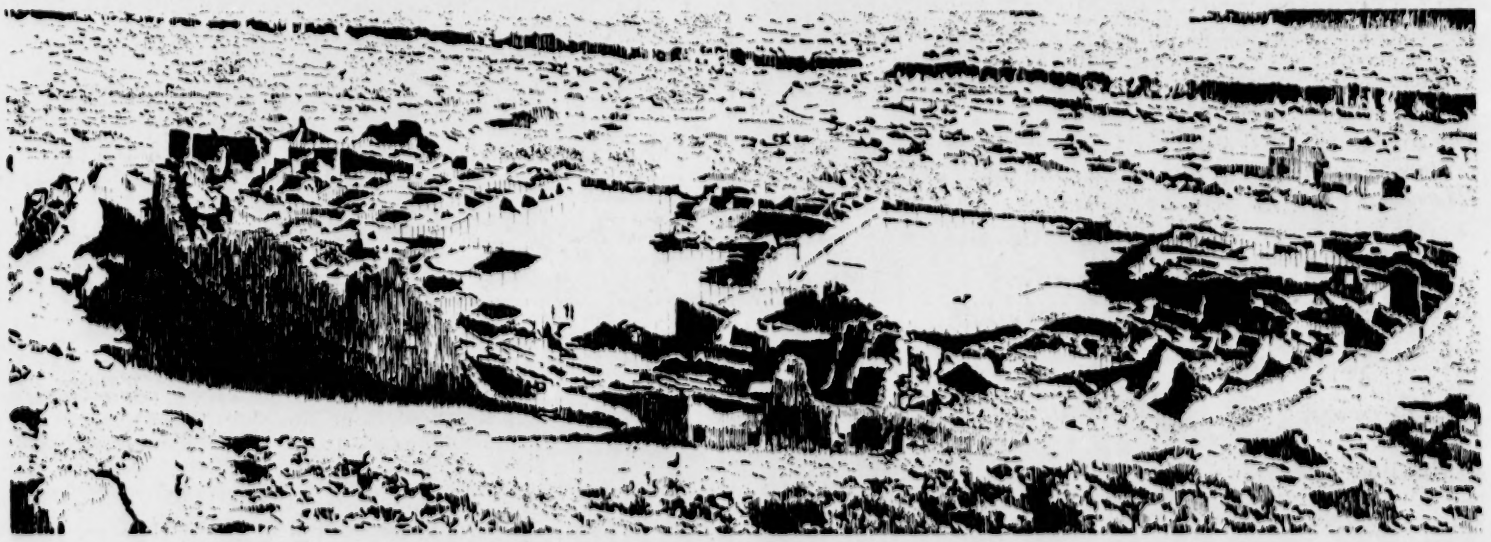
Face it, most of us are going to rent until we can build or buy. But with the cost of new homes being what it is these days, and the cost of interest on the mortgage being as high as 190% of the "cost" of the home, many who can buy or build will be involved with a mobile, modular or prefab home. If you're going to go that route, you'd better know what you are getting into. This is where to find out. Dome kits are covered too.

—J. Baldwin
[Suggested by Paul Kokesch]

Good Shelter
(A Guide to Mobile, Modular, and Prefabricated Houses, Including Domes)
Judith and Bernard Rabb
1975; 171pp.
$7.95 postpaid

from:
Quadrangle/The New York Times Book Co.
Harper & Row
Keystone Industrial Park
Scranton, PA 18512
or Whole Earth

Both Old and New Bonito operate efficiently as energy systems that mitigate seasonal variation in insolation. Each has a higher efficiency curve in winter than summer. The truly remarkable fact about New Bonito is the precision of the curves. From sunrise to sunset during the winter solstice, the efficiency profile is absolutely flat, suggesting that the greatest advantage possible is being taken by the system to receive and store energy during the daylight hours to carry through the cold winter night. During the summer solstice, not only is the efficiency profile lower, as it should be to mitigate seasonal variation, but the curve is higher in the morning when ambient air temperatures are low and lower in the afternoon when ambient air temperatures are high. New Bonito mitigates daily as well as seasonal variations in insolation.



Old House Journal Buyers' Guide

The Old House Journal *(EPILOG, 584) has published a catalog of house parts and equipment for you restorers. Looks Good.*

—J. Baldwin

The Old House Journal Buyers' Guide
1975; 33pp.
$5.50 postpaid
from:
The Old House Journal
199 Berkeley Pl.
Brooklyn, NY 11217

Tin Ceilings

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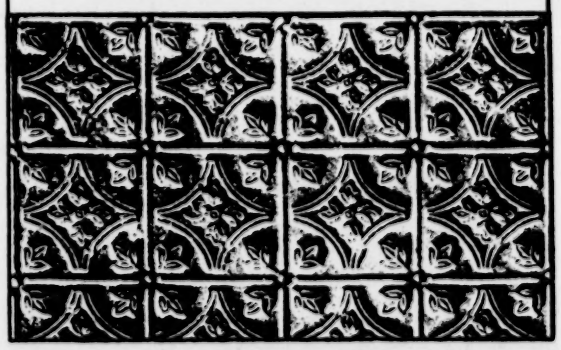
AA Abbingdon Ceiling Co.
2149 Utica Ave.
Brooklyn, N.Y. 11234
Tel. (212) BE 6-3251



Full Length Roof Framer
Simplified Stair Building

Many an amateur carpenter has crashed and burned when it came time to figure the roof rafter lengths and angles. Since 1917 there has been no excuse: this little book has all the numbers and how to use them. It's skinny and has armored covers so it can live a long useful life in the pocket of your overalls or on the radial arm saw bench. Wish someone had told me about this a long time ago.

The stair book is big and floppy so it'll lie flat on your desk while you figure things out, and also to allow big clear diagrams.

—J. Baldwin

Full Length Roof Framer
A.F.J. Riechers
1917; 118pp.
$4.00 postpaid
from:
A. Riechers
P.O. Box 405
Palo Alto, CA 94302

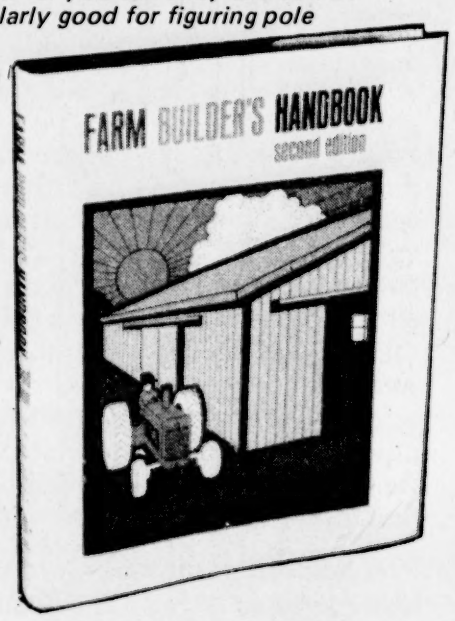
Simplified Stair Building
A.F.J. Riechers
1947; 16pp.
$2.50 postpaid
from:
A. Riechers
P.O. Box 405
Palo Alto, CA 94302

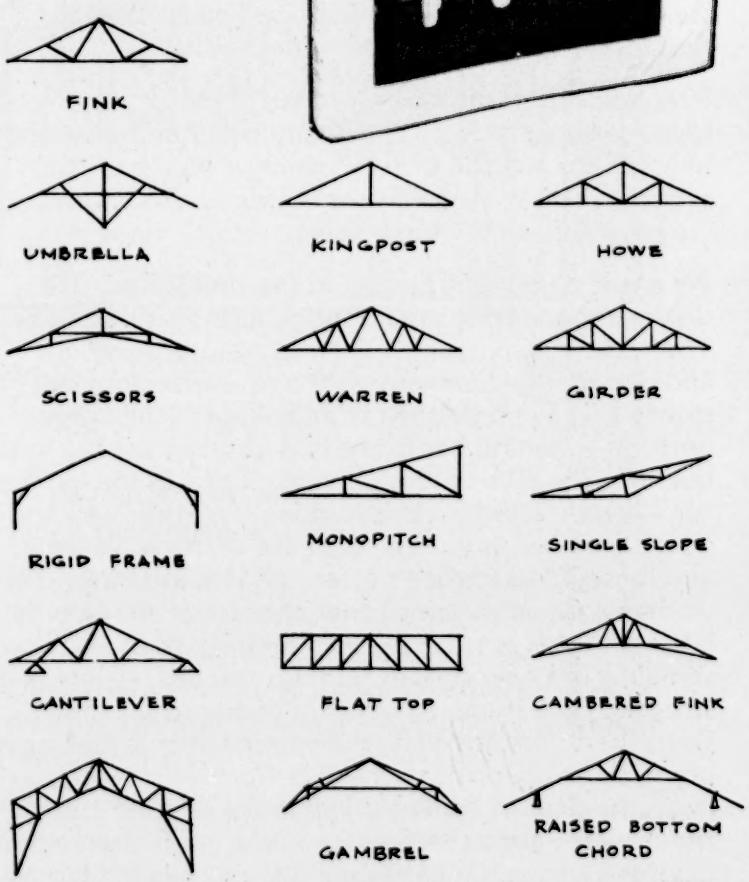
Farm Builder's Handbook

How far is it safe to span with 2 X 10 floor joists? Where do you find out stuff like that? Here. But be warned that this is not a build-your-own barn book. The author assumes that you already know how to build. This book sets safe standards for farm structures where usual city codes don't apply. Even if you don't follow his advice, his numbers will be an indicator of how far you can stray and still be safe. The book is particularly good for figuring pole type buildings.

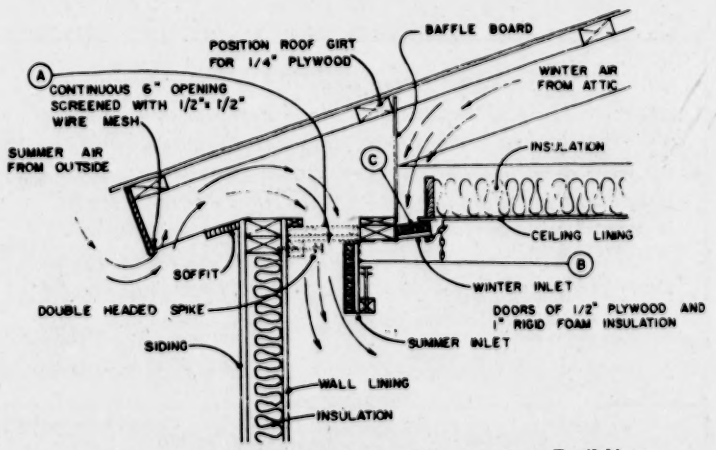
—J. Baldwin

Farm Builder's Handbook
(Second edition)
R. J. Lytle et al
1973; 264 pp.
$20.00
from:
Structures Publishing Co.
Box 423
Farmington, MI 48024
or Whole Earth





Truss Types



Ventilation Inlet System for Windowless Buildings

The B & G

BY STEVE BAER

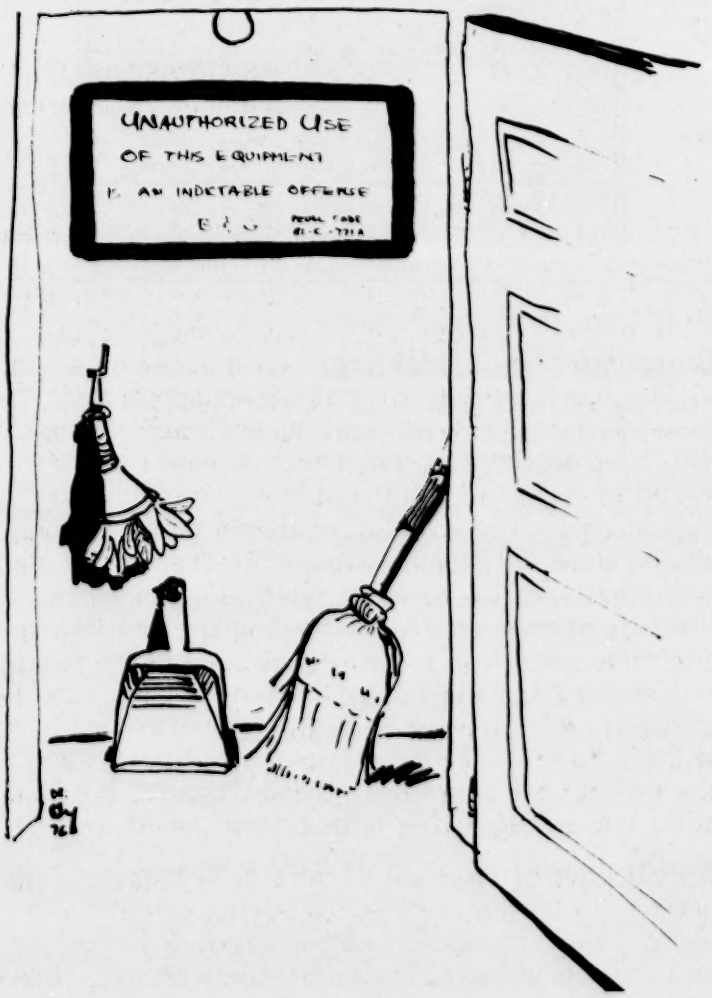
I don't think there is a proper understanding of buildings, particularly institutional buildings. What activities are they really built for? I remember in college the B & G, which stands for Buildings and Grounds. They ran the school. There are such crews all across the world. Why are we so obsessed with the FBI and the CIA when there is the B & G? They wear dark grey or green uniforms. Personnel are not accepted below the age of thirty-five; stocky, lumpy physiques are preferred, or some form of lameness. Requirements are to be able to carry an enormous ring of keys with the proper seriousness.

You hear stories of the communists where some lowly sweeper or maid is actually party commissioner in a factory and the factory manager may have to seek him out in the toilet for advice or directions. We have all seen the same thing.

We are at an evening lecture at the university. The distinguished professor, scientist, author is before us. The topic is fascinating. There are lively questions and discussion. Suddenly at 9 p.m. a side door opens slowly and a middle-aged woman appears in a grey uniform — behind her in the hall you can see the mop bucket. She says nothing, merely looks at the lecturer for a few moments. He is looking the other way and doesn't see her, but he feels a cold draft on his back and senses his audience's attention is wandering. The woman goes on to some other chore, but the door is left open. It's as if we were all taking a bath and someone has now started to drain the tub. There is no struggle. The students, only too ready to give the Dean the finger or belch while a professor is making a point, seem obedient to the B & G. Five minutes later, the woman appears again — the lecturer has tried to rally the audience, who now seem distracted. On this visit she has her mop. She catches the lecturer's eye for a moment and gives the mop a little shake — a very much less dramatic version of what you imagine a bull fighter's message to a sinking bull may be. The lecture begins to close and the woman starts hauling in her equipment. "Sorry sir, but the buildings is to be locked at 9:30."

No one shouts out, "Fuck the dust, on with our discussion!" Radicals, jocks, gays, feminists, engineers — all bow to the B & G.

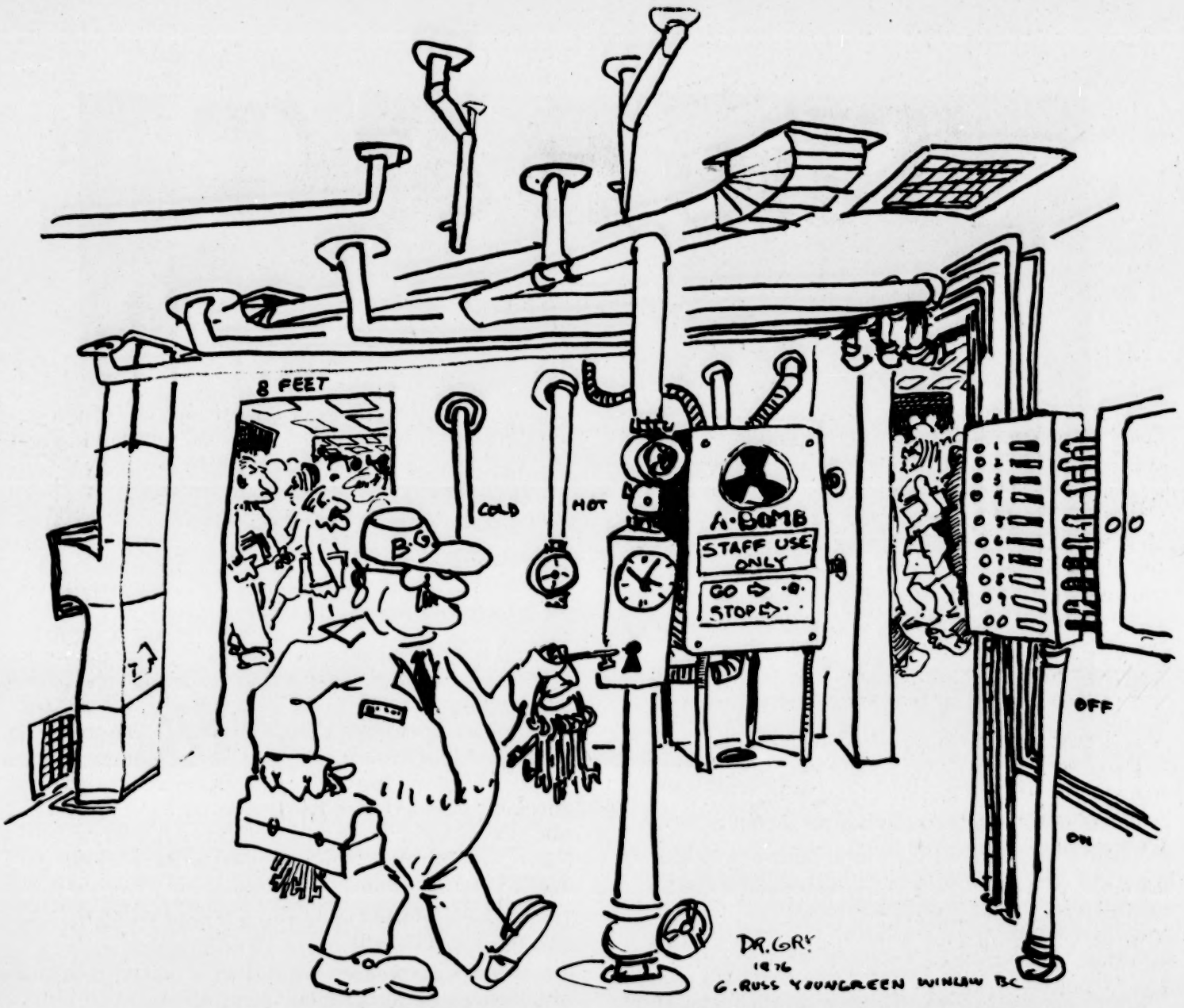
Of what importance is such a scene? Not much in one sense, but then again this may be the tiny corner of a vast empire of stupidity and obedience to schedules and demands which have nothing to do with the more important uses of architecture. Let's be on our way — track down the power flowing through the maid with her lowly mop and message about the building closing at 9:30. Let's go on and examine the heating and cooling system, the lights, the ventilation. Finally, far back in the hierarchy of the support machinery of the B & G, we might find the atom bomb itself.



Unless I'm mistaken Steve Baer has appeared in every issue of **The CQ** *except the Black Panther one, a trend that is likely to continue as long as he keeps coming up with intelligence from behind the Iron Curtain of appearances. His cover is that he runs a solar inventing and construction business called Zomeworks in Albuquerque, New Mexico, and writes occasional books such as* **Zome Primer** *and* **Sunspots**. *These two linked pieces began as college talks.*

—SB

Illustrated by G. Russ Youngreen



"It has become a moral issue: Are you or are you not going to live up to your agreement with the equipment?"

After long consideration of the B & G and the power they wield, we may conclude that man is not merely a "tool using animal," as he is sometimes defined, but a "tool hypnotized animal" ready to show concern for collections of pipes and wires as if they were parts of his own body. Ready to obey the equipment caretakers in even the most improbable circumstances. We may have opened a question that demands another Freud to begin to solve the puzzles. Someone to examine emotions aroused by copper pipes, marble floors, plate glass, locks. The architect seems helpless to grapple with the forces at work. Caught in the crossfire of concrete trucks, heating and ventilating equipment salesmen and furniture suppliers, he dodges to the side agreeing to a space where the wares can be installed. And somewhere in the subconscious, sensing the times, I suspect most of us have caught the smell of the atomic bomb and the guided missile coming in to help with "respect" for the equipment.

Is the professor obedient to the B & G because in his heart he feels all his talk about science or culture is really a lot of hot air, perhaps a diverting act to take up time between important activities such as mopping the building? How much are words and ideas worth compared to bricks, glass, copper pipes? It depends on how you feel – which, of course, is what is fascinating about the B & G taking over a University.

What if the B & G are really the only people who ever work at the University? Certainly in a factory where the janitor is up against milling machines, punch presses, and chem mill tanks you don't see him throwing his weight around. The punch press operator, though he may earn only half as much as the professor, would hardly have time to glance at the clean-up man.

Every technical achievement strengthens the hand of the B & G. Every song, every poem, every scientific discovery strengthens that of the teacher and the student.

I don't mean all these words as merely some diversion about school days. These attitudes go beyond school and beyond the mop and broom.

It is common knowledge that filth and grime in buildings is bad. It makes you suspicious of the

Brand

Steve Baer

occupants. In a sense it is a moral failure – lack of attention. Once a floor is built, it should be swept and mopped. It's as if one had signed a contract on pouring the slab. Once a window is installed, it should be cleaned.

The same contract seems to appear on the installation of a central heating system and thermostat. They demand a standard be maintained even if people are not there, for now it has become a moral issue – are or are you not going to live up to your agreement with the equipment?

The comfort of the occupant is really of secondary concern. The same logic applies to lighting systems.

I believe the school and university is a prime battleground in spreading obedience to equipment, schedules, routines, investments, etc. The man who wants to display how well he has trained a dog waits until the dog's dinner is in his bowl then calls Rex and has him roll over, sit, shake hands or whatever interesting ritual he has taught the dog. All the while the dinner and its odor are so close by. It emphasizes the power of training. And so it is with the small, seemingly powerless band of uneducated employees wandering about the institutions of learning – going into the closets under the stairs – coming up from the boiler room in the basement. The furnace versus ancient history? Don't be silly! The two are completely different. The furnace keeps the building warm so that you can concentrate in the classroom on what the professor is telling you about ancient history. But what about when the feed line ruptures and the crews work for two weeks with jackhammers outside the window digging it up? Why couldn't they do it quietly with a pick and shovel? Or, at night? Or, let us do without heat? The contract doesn't include such possibilities.

The Regents of the University are only trying to help learning when they allocate 10 million dollars for the new service center. What does it matter that those who have earned the money or power for such positions have not read a book since they left school?

You see, I am sure that the United Nations is run by the B & G – debates cut off out of respect for the schedule of a vacuum cleaner – office styles made to conform to an engineer's wish to give you the best.

It's easier on you students to learn these lessons while young. It will help the doctor later to understand the functioning of the modern hospital with a parking lot large enough to cause panic and despair in even a healthy visitor. It will help the ecologist adjust to the airports where he finds he spends half his time on the way to and from conferences on the environment.

I recently heard from a student that at his State University the administration doesn't even murmur about teachers advocating LSD and other drugs, but one poor faculty member was soon fired after he began explaining and demonstrating how to alter the dormitory rooms. Say what you want, but don't get physical.

Perhaps the only escape is to join them yourself – get your key ring, heavy shoes, and prepare yourself for a life in the halls. Or, maybe better, get upstream from the B & G. Draw up the prints which they follow – manufacture the equipment they manipulate. The problem with this escape, which seems to promise a more interesting career, is that this architecture building too has its own B & G. ■

The Bomb

BY STEVE BAER

"A dog that hasn't been chained up long forgets. It rushes across the yard and then – bang. Today when people become excited about the future and involve themselves with new uses of technology, forms of transportation, housing, energy production, they often get carried away with hope – then bam – they think about the atomic bomb, the H bomb, the ballistic missile. Today, like the dog, we all have the chain on us. There is nothing very marvellous going on unless it is something to untie that chain."

INTRODUCTION

There seems to be very little that we can do to defend ourselves from the bomb – but there are some things we can do and we are not doing them. So things are both better and worse than you would first think. Why are we so numb? Have we given up?

I suspect we have been pushing in the wrong places. We have left discussion of the matter to repentent weapons experts and other scientists. They – every now and then – debate a lot and award each other jobs (paid by your tax money) and occasionally prizes as the terror mounts.

I think it is time for the artist and the handyman inventor to begin. . . .

MOUNTAIN PEAKS

The father of a friend of mine used to collect mountain tops. After climbing Mt. Whitney he would chip off the very tip-top and put it in his pocket. I never saw his collection, which he kept on his bedroom bureau, but I imagine it looked quite unremarkable.

The top of the mountain is not so impressive as what supports it. It's a habit we have in examining problems to miss the vital supporting structure that makes whatever it is possible or perhaps inevitable and to simply collect the peaks.

In my examination of atomic bombs and nuclear weapons I'll skip the mountain peaks, the bombs themselves, and instead look at some of the suspicious geology below that finally supports such activities.

WHY DO WE HAVE THEM?

1. We have them to defend ourselves. To defend ourselves from whom? To defend ourselves from other people who have them. There doesn't seem to be any answer to this dilemma unless it is to invent weapons so much more horrible that the people will forget their atomic bombs. Or, do we have them because they simply emerge at a certain point in the technical development of our species?

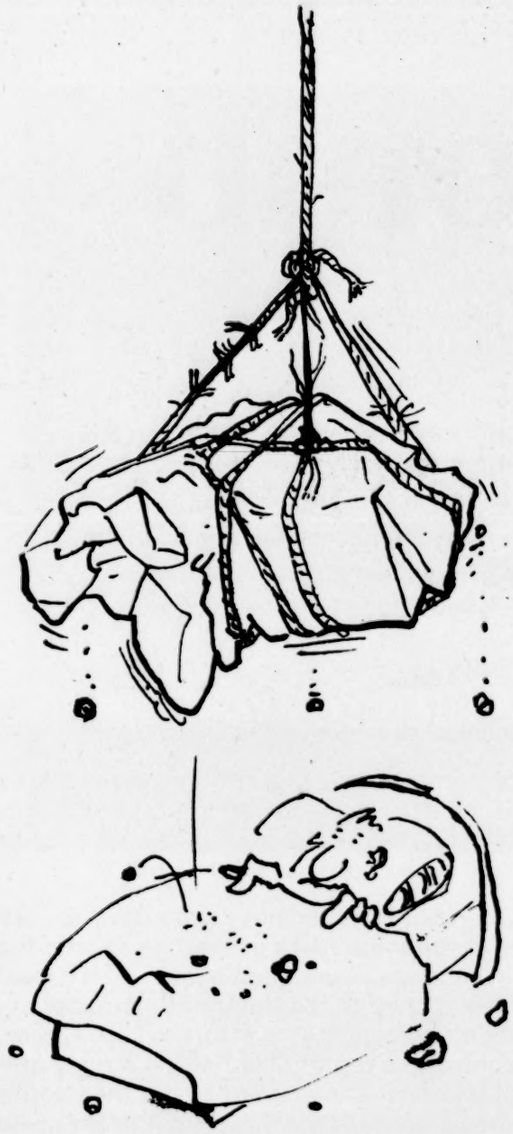
2. Are atomic attacks like earthquakes or typhoons? Even if the damage is assessed at the same number of dollars? Is it the same to skin your knee as to be held down and have your knee sand-papered?

One difference is we did not pay to develop earthquakes or typhoons. (It's interesting to note that the National Science Foundation has devoted a great deal of our tax money to the study of earthquake and weather modification – an effort to have a hand in their control – a responsible Federal agency now for natural disasters – an attempt to put the weather bureau on a par with the Strategic Air Command.)

WHO BUILT THE BOMB?

You didn't build it, did you? Well, perhaps your taxes built it.

Experts build the bomb. Experts are improving the bomb today. Once you have become such an expert



– accepted a job at a lab with such and such a mission – what are you to do? Of course, go on. "If the experts build the bomb, then the experts can take it apart." In a sense this is true, but then a fish hook can be thrust into something but not pulled out. The motion should be able to be reversed but it can't be.

Why would someone become a weapons expert? Power, money, patriotism. How are you going to get power and money or be thought patriotic for taking things apart?

Perhaps the cure for the bomb must come from a completely opposite source! A device constructed of wood and rocks – needing no tools whatsoever, no specialized skills.

Listening to the armaments people talk about controlling arms – ex-scientists, generals, admirals -- what can they really know about a cure for what they have built? Certainly it is the least we should expect from them – that they now devote themselves to trying to correct their mistakes. But there seems to me to be no reason for optimism.

Most of us would probably agree that we need logic on our side in such an important struggle as this. And then we'd be likely to agree that it is our scientists who best understand – indeed embody – logic, and then we are at an impasse.

The question of whom one selects as his leaders in such a struggle is important. We have looked to such men as Oppenheimer and now Sakharov. It is easy to understand the guilty flocking to such a cause in an effort to make things right. But it isn't easy to understand how we allow them to be the leaders of the movement. Would you make a turncoat a general?

ARGUE ABOUT THE ARMS BUDGET?

I am not going to argue about the arms budget and the Pentagon. We have all heard enough of that. What good does it do? The generals and other officials know they are protecting us, working in our interest. They allow us to fuss – after all it's a democracy. But what would you do if you were Secretary of Defense? You probably never will be Secretary of Defense and so we can leave this uncomfortable subject. If I were Secretary of Defense I think I would judge myself to be in a hopeless position. I would pray that somewhere someone with more time on his hands was figuring out an answer to these dilemmas.

The public and our representatives agree to paralyze each other. The so-called responsible public with great sympathy for the pressures and secrets has backed away from suggesting any imaginative answers. The official surrounded by this vacuum continues to roll along in precisely the same direction. And certainly we can't look to the Russians for leadership – they seem to be worse than we are.

A BAD SIDELIGHT

A bad sidelight to some people's disgust with the bomb is their seeing it as a natural consequence of work with technology. Some of our citizens see any technical occupation whatever as at best a juvenile form of what in its maturity produces bombs and guided missiles.

OBEDIENCE TO FEAR

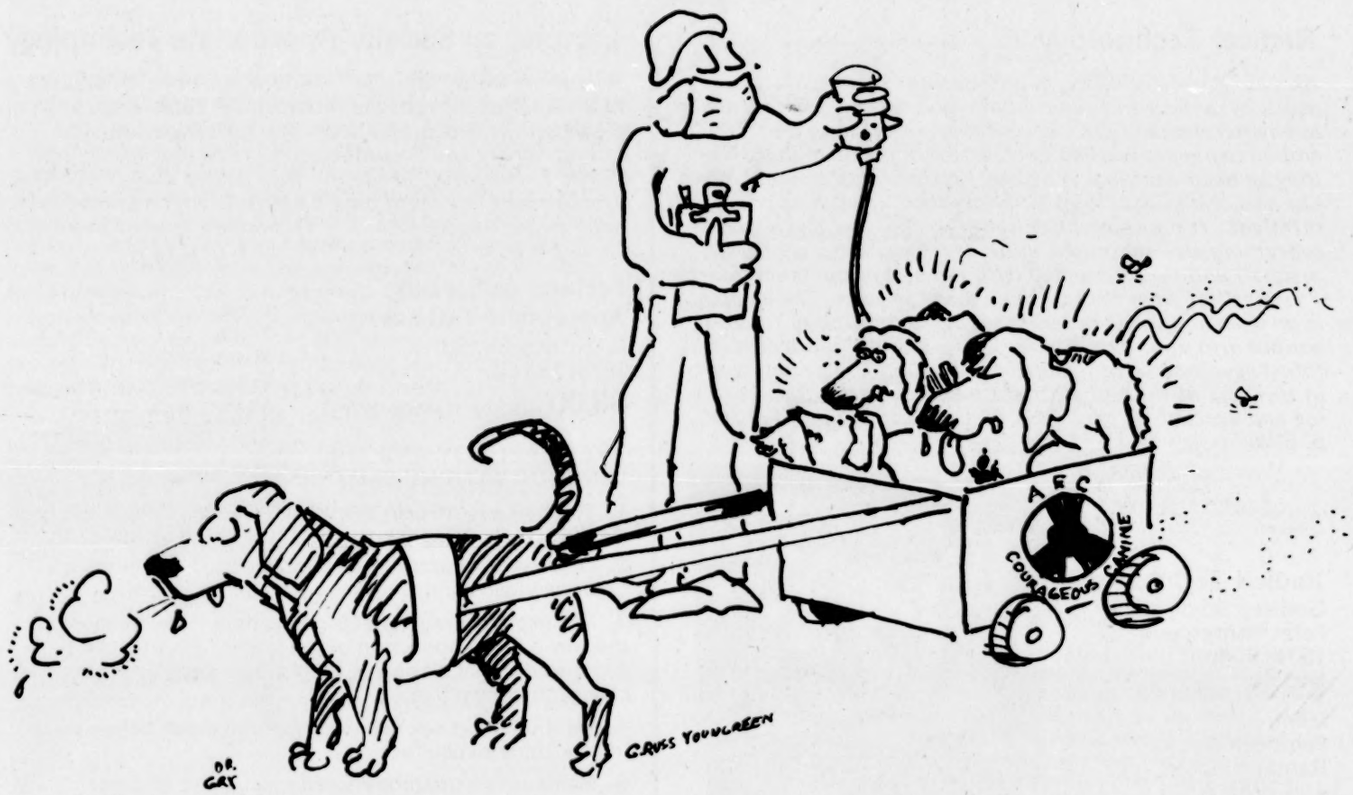
Today we are becoming obedient to the dangers. The peace prize is given to a man who invented the H-bomb – how does that make sense? People are told that they have to pay taxes to build weapons in order to stay safe – even though they have seen their country beaten at war by bicycles and hand guns.

DOG CHAIN

A dog that hasn't been chained up long forgets. It rushes across the yard and then – bang. Today when people become excited about the future and involve themselves with new uses of technology, forms of transportation, housing, energy production, they often get carried away with hope – then bam – they think about the atomic bomb, the H-bomb, the ballistic missile. Today, like the dog, we all have the chain on us. There is nothing very marvelous going on unless it is something to untie that chain.

THE CHANCES

Military experts estimate probabilities of nuclear wars and nuclear accidents. But how clear is this to the tax payer? How big a rock suspended by how flimsy



a rope above your bedroom would they judge to be a similar danger? Can't we use our modern technology to stop this thing from sneaking up on us?

Why not invite Russia to show us films about how they they are going to mangle us – projected on the clouds. Near Kirtland Air Force base doctors work to investigate the hazards of radioactive poisons. Dozens of beagle dogs that live in sanitary cages breathe plutonium particles and get lung cancer. Couldn't the dogs, man's best friend have their few yards in our annual parade? Those that are now too sick to walk could be pulled by the healthier ones in little carts – with lab technicians walking along beside.

Is there some way our behavioral scientists and linguistic experts could work out a code whereby other species could be informed of our work? What do sparrows think of the risks? The common cat, what's his opinion of the H-bomb?

Which do people feel a greater threat – Charlie Manson or the H-bomb?

SAKHAROV GETS THE NOBEL PEACE PRIZE

The habit of considering atomic weapons pioneers for peace prizes is ghastly. You might as well award a singing prize not to someone with a beautiful voice, but to a man who succeeds with any kind of sound in drowning the noise of his own fart.

SACRIFICES

Couldn't we reinstitute human sacrifices to clarify the dangers we are creating? Perhaps one human sacrifice for every megadeath capability, and have the victims proudly volunteered from the scientists' families.

TELEVISION

Tell us through television! Life after the blast – preparation for the blast. How to build an atomic bomb. That should wake you up. Why can't we spread the knowledge a long way – just as we are taught about the Greeks – the traditions of democracy – can't we be taught about the atomic bomb?

It is time for a grass roots effort at arms control.

What about a picture of our president standing beside the button?

We have a system like this. We wish to remove a hill of rocks. To be allowed to the top of the hill to carry a rock down you must deliver two to the top!

HOMEMADE ARMS CONTROL

We need homebuilt arms control equipment. I don't mean bomb shelters where people huddle like rats. I mean devices that stop bombs. Perhaps large roof top murals that would frighten them away – or carefully built structures that could catch bombs and render them harmless.

Couldn't we at least have such ideas tested? Different states could send their entries.

I expect that a house, carefully built, but placed upside down with the floor open to the sky like a gigantic bowl would effectively attract and render harmless bombs and missiles. All the houses in Hiroshima and Nagasaki were blown flat, then how could this scheme work? None of their houses were built upside down, and so the idea has not been tested. It may take some time and a lot of work, but we citizens have got to get started on something. ■

Radical Technology

Ah yes. Wind machines, poorly detailed solar collectors, goats, pyramids, and typical bourgeois schemes masquerading as environmentally OK because they are wearing the less-embarrassing pre-washed Levis which make them look like they've been working. You can find lots of books that look like this one in any "organic bookshop". But this book is different. It has sharp criticism of society and just about everything else you might think of (done in that sly British manner) and this is coupled with the best presentation of "Visions" of what may be done that I've seen. The emphasis is on changing social order by taking responsibility for your actions into your own hands. The publishers blurb calls it "the encyclopedia of a multifaceted quest". The only book in this part of the culture that I have personally found exciting and excited. It's by the Undercurrents *people (EPILOG, p. 538).*

—J. Baldwin

Radical Technology
Godfrey Boyle and
Peter Harper, eds.
1976; 304pp.
$5.95 postpaid
from:
Pantheon Books
Random House, Inc.
455 Hahn Road
Westminster, MD 21157
or Whole Earth

Ideological forces are just as much at work in academically influential studies of modern ecology. Howard Odum's **Environment, Power, and Society** (Wiley, New York, 1970) is a particularly obvious example, in which the author's views on "power and society" are dressed up as energy-flow diagrams and made to seem logically necessary.

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"Radical Technology" is a very vague term we decided to use because, having rejected "Mutiny on Spaceship Earth", "Moulin Rouge", "Bicycles of the Gods" and other such gems, we couldn't think of a better title for the book. For a long time we referred to it as "The Alternative Technology Book" because "alternative technology" — or "AT" as it is known in the trade — is by far the most widely accepted umbrella term for wind-generators, methane-digestors, autonomous houses, solar stills, etc., etc. But this was exactly its problem. It was too much associated with pure gadgetry, especially of the merely environmental variety, for use by the affluent to soothe their consciences and amaze their friends at a safe distance from the cities.

We wanted to express an ideal of technological organisation that was part of a total movement towards a new form of society; but at the same time to assert the belief that technology itself matters, not *just* who controls it — that, in other words, not only the relations of production, but the *means themselves* must be changed to permit the achievement of a just, stable and fulfilling society.

Lectures on Socially Appropriate Technology

Accent the word "socially." Though most of the ideas will be familiar to followers of the Intermediate Technology Development Group, this is the first collection I've seen of such variety and documentation. It's a real kick to see "Small Is Beautiful" in action. Real people doing real things! I recommend this set of papers highly to anyone who has in mind taking Appropriate Soft Technology beyond mere talk.

—J. Baldwin

Lectures on Socially Appropriate Technology
R. J. Congdon, Ed.
1975; 235 pp.
$6.00 (postal money order)
from:
TOOL
Postbus 525
Eindhoven
Netherlands

THE SMALL BOY AND THE EMPEROR WITH NO CLOTHES

1. The best way to help the developing countries is not by aid, but by changing the terms of trade in their favor.
2. Developing countries would do better if they went to Chairman Mao's China before seeking help in Europe.
3. The professionals have become colonials in the sense that they have taken possession of the knowledge of technology — a knowledge that all people should possess to be able to change their own lives.
4. We should put our own backyards in order before we look at other people's.
5. Mankind is a thermodynamic species like all other animals on this earth.
6. The purpose of economics is not to maximize the flow of resources in through our mouths and out through our waste disposal systems.
7. Small boys are not afraid of being fired.

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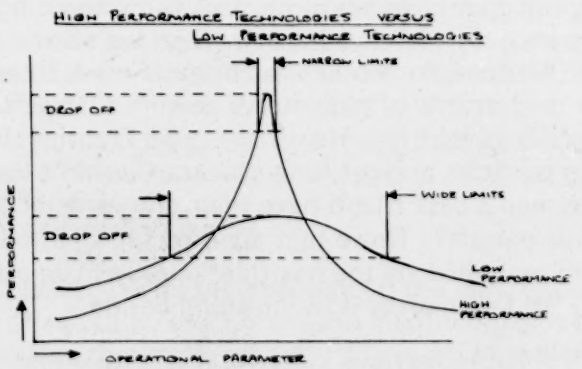

High performance technologies tend to fall drastically away from peak conditions.

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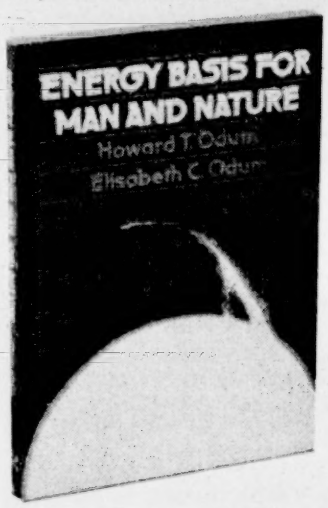
In the Wusih area of China it was decided many years ago that reinforced concrete was not of very great interest to them, so the principal building material continued to be the traditional brick. But this is one of China's canal areas and when it was realized that timber for making boats was becoming very scarce, they started to search for alternatives. The factory that we visited had been a building materials factory. Even though none of them had built a boat before, they were asked to have a try at building one from cement, since they had the most skills in using this material. In fact they built two. First of all, since they knew how to build sheds, they made a shed out of cement, tipped it upside down and launched it to see how it floated. Then, for comparison, they got a wooden boat and cast cement round it. On the basis of the performance of these two strange objects they modified their design. In this province now they are turning out about one million tons of ferro cement boats a year. The boats are about 25% heavier than wooden ones, but this is largely because the Chinese safety standards for small boats are somewhat higher than those of Britain. Boats designed for use on their inland waterways would be considered by us quite suitable to cross the 'ocean' between Britain and Holland.

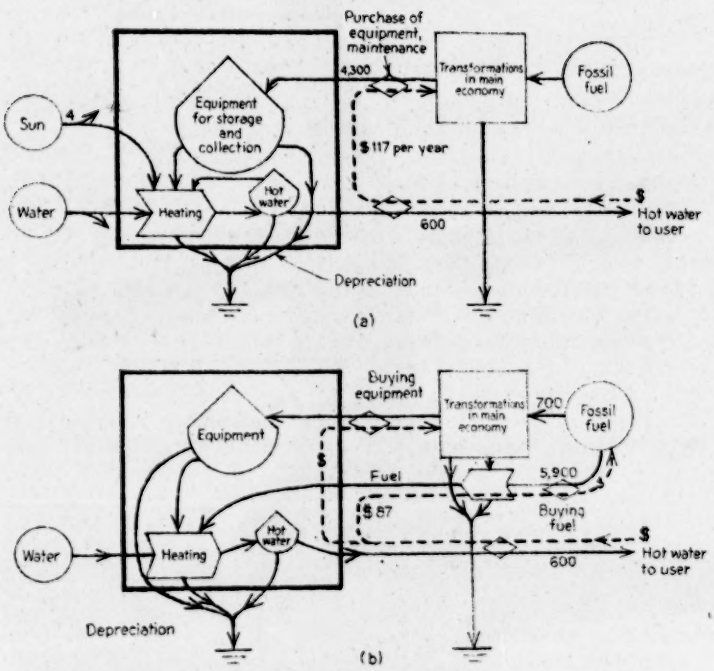
Energy Basis for Man and Nature

Howard Odum's first presentation of these concepts in **Environment Power and Society** *(CATALOG, p. 8) did not lend itself to easy perusal by laypersons. This book is much more clearly organized. Consequently, the information is more likely to be understood by persons who need to know it but who couldn't manage to slug their way through the previous book. Such as politicians. I've heard it said that making it all this clear also has illuminated flaws as well, flaws arising mostly from the broadness of the generalities. But I don't count this as a problem. There are so many important ideas here that a flaw or two only whets the mind and shows how much further the Odums' ideas might be carried. The book is set up to be used as a textbook, and I may well use it as that in the course I teach.*

–J. Baldwin



Energy Basis for Man and Nature
Howard T. Odum and Elizabeth C. Odum
1976; 297pp.
$13.95 postpaid
from:
McGraw-Hill Book Co.
c/o Trade Order Service Dept.
Princeton Road
Highstown, NJ 08520
or Whole Earth



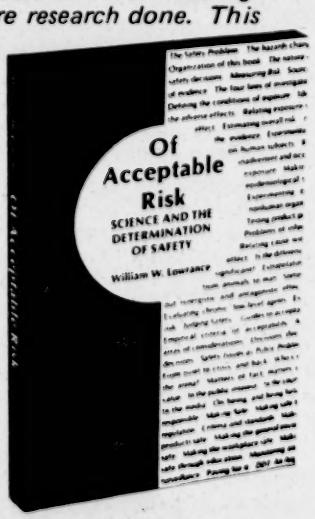
Energy flows in solar technology; comparison of (a) solar water heater and (b) fossil-fuel (gas) water heater. Numbers are thousands of Calories per year (fossil-fuel equivalents).* (Zuchetto and Brown, 1975.) *Both systems use fossil fuel indirectly to supply and maintain equipment. The solar heater takes more equipment but uses less fuel directly. The fossil-fuel heater involves less equipment and storage and less depreciation but requires the purchase of fuel.

Solar heating of houses and water uses much fossil fuel indirectly in the installations. Solar heaters have been used for a long time in sunny climates. Figure *a* and *b* compares a solar water heater and a fossil-fuel water heater. In this case solar energy is being used to make low-quality heat energy. In sunny climates, using some sunlight along with fossil fuels, energy is saved by solar heaters as compared with electric and gas water heaters. However, solar heaters use much more fossil fuels than solar energy when they are compared on an equal-quality basis (fossil-fuel equivalents). No net energy is yielded. Capital costs at the start are high in terms of money and energy; savings are obtained later, after the heater has run for several years. One unanswered question is this: Would more energy have been saved if fossil fuels had been put into something else rather than into solar water heaters? As the energy for required materials becomes more costly, technology for solar heating will also become more costly. One concludes that there are ways to conserve energy using solar technology, but solar technology is not a source of energy for running our economy generally.

Of Acceptable Risk

How safe is that bag of Barbeque Potato Chips? Who says so? Has anyone checked? Have the studies been scientifically valid? Have the results been suppressed? Has anyone tested for interactions with other foods? Does anyone care? This disquieting book tells what's being done and what should be done. What will be done is up to us as citizens. I found the lack of emotional cause-hustling refreshing. There should be more research done. This tells why.

–J. Baldwin



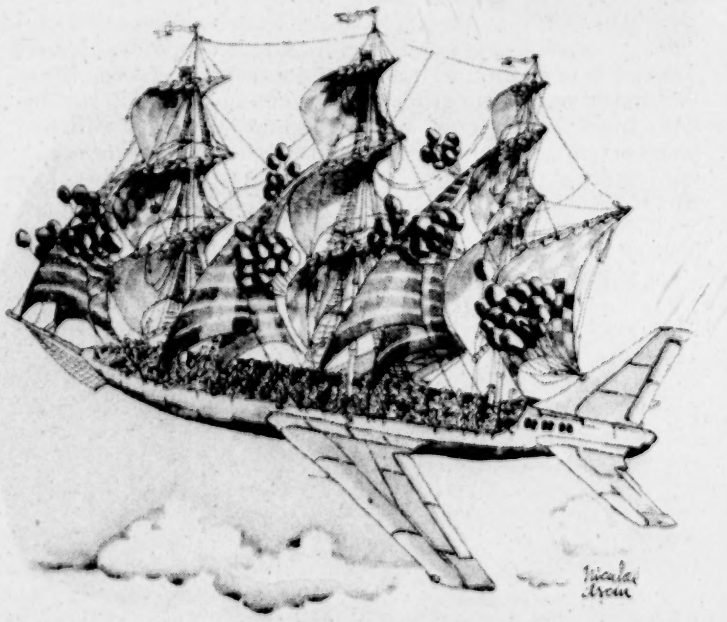
Of Acceptable Risk
(Science and the Determination of Safety)
William W. Lowrance
1976; 180pp.
$4.95 postpaid
from:
William Kaufmann, Inc.
One First Street
Los Altos, CA 94022
or Whole Earth

THE FOUR LINES OF INVESTIGATION

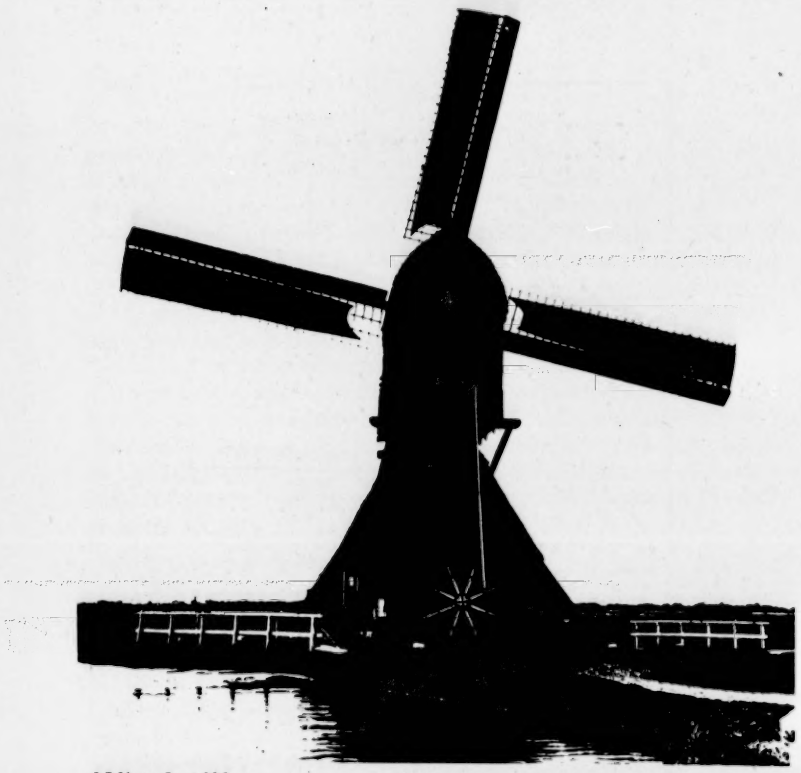
Peeled back to their essential nature, all of the many questions about hazards, whatever they specifically happen to be, divide into four lines of investigation. In assessing risk, measurements are made in order to:

1. Define the conditions of exposure;
2. Identify the adverse effects;
3. Relate exposure with effect;
4. Estimate overall risk.

These need not be sequential, although progress on one often spurs action on another. They can be pursued independently and simultaneously, but they overlap and are quite interdependent.



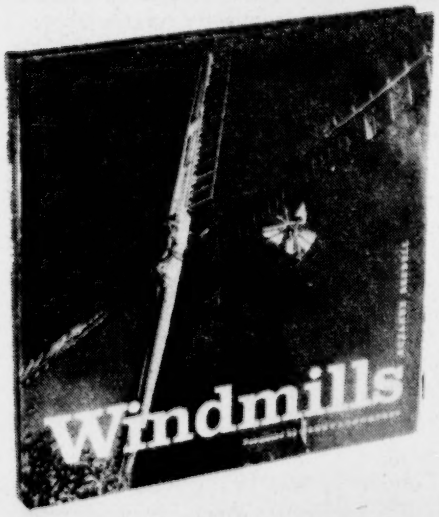
Drawing by Niculae Asciu; c1974 The New Yorker.



Windmills

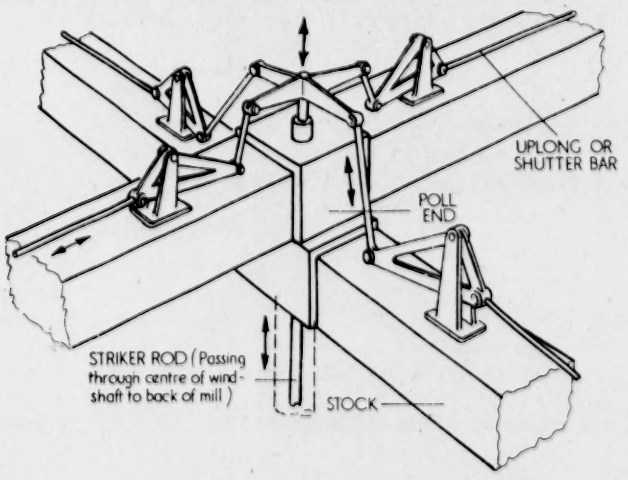
People have asked me if Stewart lets the reviewer/evaluators take the books as payment for their work. He doesn't, dammit, or this book would for sure be one I'd cop. It's just beautiful, and it goes way beyond the usual historical-esthetic presentation typical of expensive coffee table pretties. You actually get the complete explanation of how they work! Complete enough, in fact, to make one . . . (guess I'll just borrow it awhile, heh heh) and I'd like to extend a sincere compliment for the reasonable price too.

—J. Baldwin



Windmills
Suzanne Beedell
1975; 143 pp.
$12.00 postpaid
from:
Charles Scribner's Sons
Vreeland Ave.
Totowa, NJ 07512
or Whole Earth

There are tales that, in areas where smuggling went on, windmills were frequently used to convey warning signals. On a prearranged code, the sails would quietly be turned to a certain position at the approach of the revenue men, for instance, thus passing a message very quickly over miles of countryside.



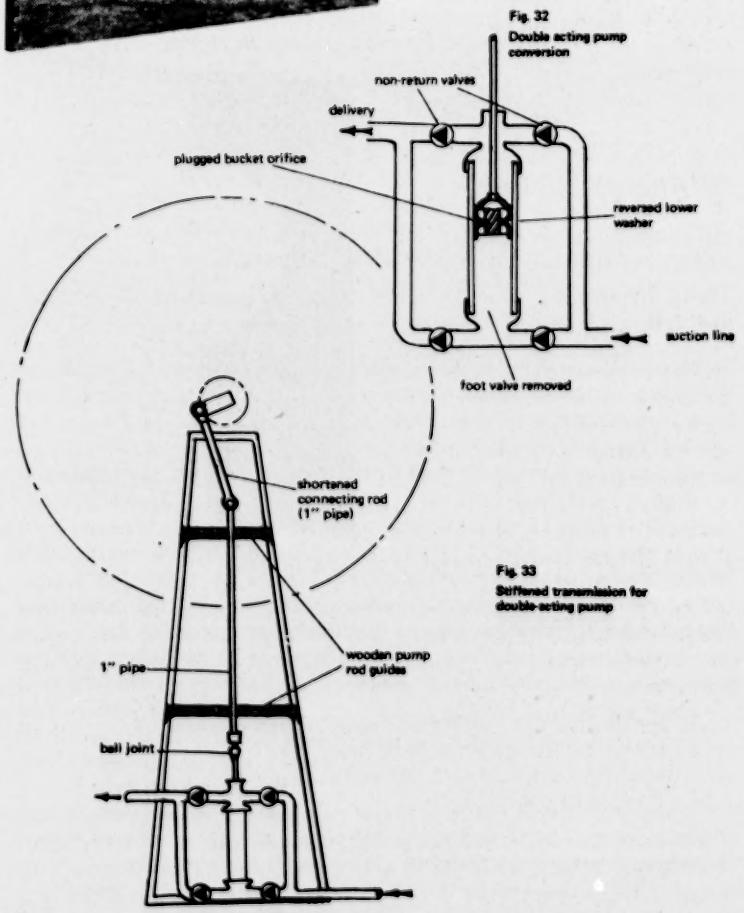
Food From Windmills

ITDG (Intermediate Technology Development Group) has just published an exciting book describing how a programme of simple sailwing windmill waterpumps has considerably raised the food production of a bit of Ethiopia. Though no actual dimensioned plans are given, enough details of the laboriously evolved machines are given so that you could make one that would work. Mr. Fraenkel claims that their sailwings will greatly outpump a Savonius Rotor, especially in low wind. Cost less too. The machines look pretty funky, but those of you that actually have made windmills will appreciate the excellence of the work done by Mr. Fraenkel and his associates. It is often more difficult to develop a reliable simple machine than to do it super-slick with an NSF grant. We're starting construction of a windpump at Farallones Institute. This book is our text.

And for the sailwing or other simple machinery, you can make bearings from wood. This is a skill well worth learning, as it enables you to make and service equipment that would otherwise be entirely dependent upon the supply of industrial bearings. I can think of circumstances where this could be critical. How to do it is nicely shown in the Feb. issue of the ITDG quarterly "Appropriate Technology."

—J. Baldwin

Food From Windmills
Peter Fraenkel
1975; 75pp.
$7.70 surface mail
$11.20 airmail
A subscription to
Appropriate Technology
is $7.00 surface mail,
$10.50 airmail
from:
Intermediate Technology
Publications Ltd.
9 King St. (Covent Garden)
London WC2E 8HN
England



Gemini progress

We reported on the Gemini Synchronous Inverter in the Fall 1975 **CQ**. *In case you missed it, the Gemini enables you to "store" energy from a wind generator or other sources by running it back into the power company's grid; in effect running your electric meter backwards. Geminis are under study not only by power companies, but by industries that make a lot of waste heat which could be used to generate power. (It's not merely a few homesteads with wind or water powered generators that could benefit.) A Gemini can also be used to combine wind or water power with a Diesel generator at a remote site, thus saving fuel and wear. Hans Meyer of Windworks writes:*

"Utilities today are often characterized as the villains when in fact 'they are us'. It is the demands that we as a society place on our utilities that is the problem. There are approximately 25 synchronous inverters that have been put in operation in the last six months. The utilities that have been involved in these installations have been extremely responsive and cooperative, indicative of their interest in our society's energy future."

It remains to be seen whether this cooperation continues as more Geminis are put into operation and the principle is scaled up. Obviously there is a great potential for energy efficiency in their use. Just as obvious is the fact that the existing power grid that the Gemini uses for storage must be equitably paid for. And there are, of course, certain complex questions that remain to be answered as power consumers begin to act also as power makers. . . . We'll keep you posted.

—J. Baldwin

P.S. The Gemini Synchronous Inverters cost about $1275 from Windworks, Box 329, Mukwonago, WI 53149.

Pegasus revisited

I've never pretended to have read everything on a subject before making an evaluation for the **CQ**. *Sometimes we print stuff uncritically just to show that people are thinking along promising lines. That occasionally will get a reviewer into hot water (or worse, in this case). Here's two barrels of 12 gauge Magnum Goose Loads, right in the heart:*

—J. Baldwin

[Stewart: I'm so ashamed. It would be libelous but good to print this letter. It's what **CQ** *is about. —JB]*

Dear J.:

I would like to comment upon your evaluation of the book **Pegasus** in the fall issue of **CQ**, inform you of some of the overwhelming mass of information which has been generated concerning gas producers or generators, and by my short critique of **Pegasus** and the inclusion of a bibliography which I compiled to tell you something of my approach to evaluating literature.

Pegasus is but one step above being shit, and that only because it might teach some people something in spite of itself and has less than an outrageous price. I judge it to be perhaps even lower that the typical Mother Earth/Rodale technical schlock. Even to a person untutored in the history of design and use of gas producers a few items in the book might seem immediately suspicious. What good use is served by erroneously claiming that a word should be coined to describe gas producers? Such devices are commonly referred to and indexed as gas producers, gas generators, and the product as generator or producer gas in literature which extends past the turn of the century. The Swedish Royal Academy of Engineers hefty book describing their wartime experience with gas producers is aptly titled **Gengas**, from *gen*erator *gas*.

Next, beware the diagrams and sketches in the book. You will note different styles among them and an occasional foreign word (if I remember correctly. I wouldn't walk to the next room to look at it unless it was to point out how to produce a shuck, and as it is the nearest copy is 20 miles away), leading you to believe that the illustrations were stolen without credit. As your experience with the literature increases you will indeed soon see the originals. By God, it's a loathsome practice to use others' materials without credit because it denies the producer of the original proper due, places the reproducer in an improper light, and fails to give the reader proper and sufficient information about the background and history of the topic. To the eager and perceptive reader such information is a blessing in tracing the development and changes in a technical (or literary or philosophical) scheme.

I remember the text as being poor, unclear, and overstated in its own right, let alone in comparison to most of the rest of the literature. And concluding the masterful book is a paltry, flawed, inaccurate, anemic, and bullshit bibliography.

If you would like to see some of the real stuff allow me to give you a few references.

A bib. – Try U.S. Dept. Agr., Agricultural Research Administration, Bureau of Agricultural and Industrial Chemistry paper AIC-103, **Bibliography on Construction, Design, Economics, performance, and Theory of Portable and Small Stationary Gas Producers**, Oct. 1946. 96 pages. It is international, multilingual, and annotated. The date of publication denies it coverage of the postwar retrospective analysis of the gas producers.

Or try the November 5, 1942 special number of the **Automobile Engineer**. It is a good mid-war introduction to gas producer use in a large variety of vehicles. 45 pages.

If you can handle Swedish you should try to find a copy of **Gengas**. It is one hell of an impressive evaluation of their experiences with predominantly wood- or charcoal-fired producers during WW II; something around 400 pages with illustrations and diagrams, charts, figures. . . .

And if anyone really wants to get into it they should start looking at WW II era Forestry Abstracts and Engineering Index. There is Australian, Canadian, British, French, German, Swedish, Finnish and other literature up the kazoo.

Right now the whole thing looks like a dream by someone who has been smoking back issues of **Alternative Sources of Energy**. I guess that the price of fuels for transport would have to triple or quadruple before we could think about using producers for transport purposes.

John Mitchel was once preparing to do an issue of **Alternative Sources of Energy** devoted to wood, with a hefty section on gas producers. I don't know what became of the project.

The enclosed bibliography: Everything is pretty clear concerning how I approached the subject, where I looked, what I came up with, and annotations of something like 35% of the entries. The availability is unclear; send $2.00 (no money making there) in check or money order to Dept. Agricultural Engineering, University of Minnesota, St. Paul, MN 55108. Don't tempt Jim Moore by making them payable to him.

I hope that you find my comments and the bib. of interest and use. I'm looking forward to future copies of **CQ**.

Sincerely,
Gregg Shadduck
Eagan, Minnesota

Mr. Shadduck's book is listed below. It's just what it says in the title. The abstracts make it particularly useful, and it should be on top of the book pile of any serious biogas experimenter.

—J. Baldwin

The Anaerobic Digestion of Livestock Wastes to Produce Methane
(1946—June 1975: A Bibliography with Abstracts)
Gregg Shadduck and James A. Moore
1975; 103pp.

$2.00 postpaid

from:
James A. Moore
Dept. of Agricultural Engineering
University of Minnesota
St. Paul, MN 55108

Solar Age

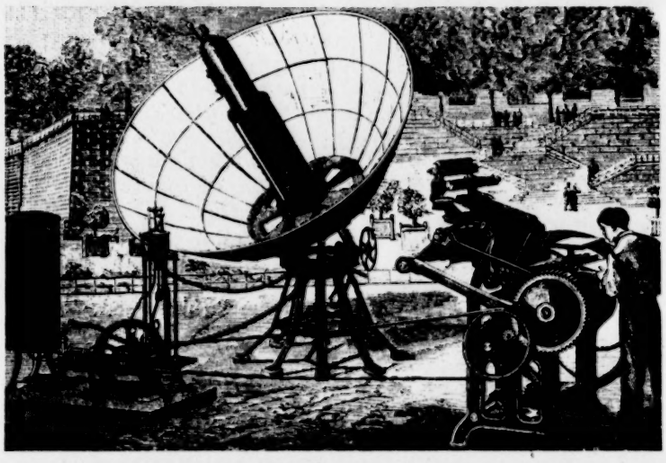
A new and very welcome magazine on the scene! It's thick enough to carry articles that go beyond mere reporting, yet it isn't into the intimidating superscientific big business approach either. It's professionals who are doing it talking to one another . . . and that's good. The magazine is dedicated to getting solar hardware into action now. My only gripe is that the publisher has used too much of the budget for being slick and fancy; I'd rather have more articles than a gold metallic cover. Nonetheless it looks like a good start and we wish them success.

—J. Baldwin

Solar Age
Bruce Anderson, editor
$20.00/yr. monthly
($3.50/single copy)

from:
SolarVision Inc.
Rt. 515, Box 288
Vernon, NJ 07462

"The cost of a thing is the amount of what I call life which is required to be exchanged for it immediately or in the long run." —Henry David Thoreau, **Walden**



Parabolic collector powered a printing press at 1878 Paris Exposition.

How to Design and Build a Solar Swimming Pool Heater

What makes this booklet unique is that it is by the pros who really know how to work their materials (in this case, obviously, copper). While I have reservations about using any resources for such fripperies, I sure can't fault this as a dissertation on the technique and design. It's also one of the best papers on true cost calculations I've seen. And you could use the information for other purposes, yes?

—J. Baldwin

How to Design and Build a Solar Swimming Pool Heater
Francis de Winter
1975; 46pp.

Free from:
Copper Development Association, Inc.
405 Lexington Ave.
New York, NY 10017

The True Annual Cost of Equipment

Equipment generally has a limited life, and its use involves tying up a significant amount of money. It is not correct simply to split the equipment cost among the years-of-life of the equipment. This is only an adequate accounting scheme if you keep your money in a mattress, and if the money you spend on the equipment has no influence on what you do with the rest of your funds.

It is much more realistic to imagine that you have to borrow the money (for buying the equipment) from a bank (or from yourself) at prevailing interest rates, and then pay it back in equal installments during the life of the equipment. Payments would be at the end of each year. The setup is the same as a home mortgage, and the only difference is that at the end of the payments the equipment is presumably worn out and has no remaining scrap value.

Passive Solar Analysis

Dear Stewart;

I am enclosing a copy of an abstract of the paper Doug Balcomb gave at our recent New Mexico Solar Energy Association Meeting.

I wish Harold Hay had been there to hear it.

Finally one of the government labs is giving some support to the simplest and generally cheapest form of solar heating.

Best,

Steve Baer
Albuquerque, New Mexico

The report reads in part:

Solar gains through windows, walls, and modified walls, provide an opportunity to reduce dramatically the total heating requirements of a building.

Five preliminary conclusions are particularly striking:

1) For the same glass area, a performance comparable to that of a conventional active air or liquid cooled collector system should be achievable in an optimized design passive solar heating system. (See graph)

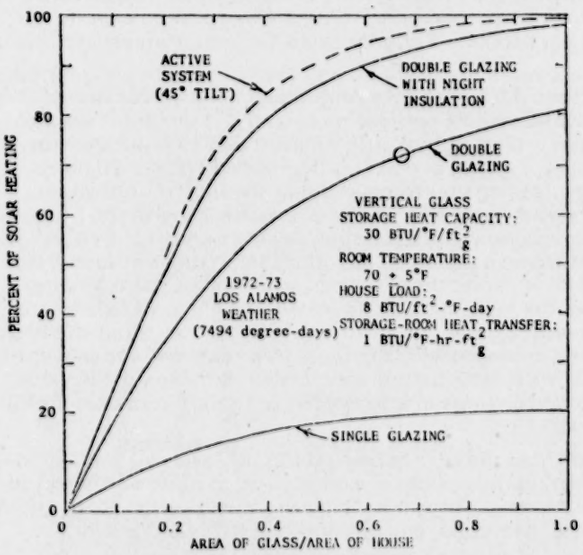
2) Much better performance can be achieved if storage is located so that it is directly heated by the sun rather than indirectly heated by sunlight absorbed within the heated space.

3) Storage mass is much more important in a passive solar heating system than in the conventional active system. The "knee of the curve" is at roughly twice the storage heat capacity, that is, at 30 BTU/ft^2 of glass/^{o} F for a passive system, rather than at one-half this value in an active system.

4) Storage should be partially insulated from the heated space (provided storage is directly heated by the sun as recommended in Item 2, above). In fact, there exists an optimum insulation value of roughly 1.5 BTU/ft^2/^{o} F/hr.

5) Double glazing is extremely important to achieving good performance. Additional performance can be achieved with night insulation.

6) The low thermal admittance of concrete results in high daytime outside surface temperatures and therefore a decreased effectiveness of the wall as a combined absorber-storage medium. A high admittance material (such as water contained in cans) will have a much better performance.



For information: *J. Douglas Balcomb*
Los Alamos Scientific Laboratory
Los Alamos, NM 87545

A-Z Solar Products

Everything from sundials to solar bumper stickers can be had from this catalog. We don't have experience with the quality or performance of some of the items, but they sure stock a variety of stuff, some of it difficult to find elsewhere. This service has been needed for a long time. This catalog services a chain of retail stores currently being developed.

—J. Baldwin

A-Z Solar Products Catalog

Free

from:
A-Z Solar Products
200 E. 26th St.
Minneapolis, MN 55404

"NEXTEL" Brand Velvet Optical Black

- **Infrared absorbing coating for thermal control.**
- **Solar absorption 98%.**

"Nextel" Brand Velvet 101-C10 is an air dry enamel designed for spray application to properly primed surfaces. This coating uniformly scatters light regardless of incidence angle and provides extremely uniform light diffusion over a wide range of viewing angles. Coverage is 200 sq. ft./gal. (5 sq. meters/liter.) Maximum recommended temperature continuous service is 300° F (149° C).

No. 7860 6 oz. aerosol **$4.59**
No. 7861 1 gallon 11 lbs. **$43.95**
T.C.C.

Your Home's Solar Potential

If you already have a house, how do you go about figuring out if there is any sense in retrofitting a solar heating system? Hiring somebody to check out your place can be expensive, and doing it yourself is likely to prove difficult unless you have training. But with the help of this book, you don't need the training. What it amounts to is a list of things to check; things like roof angles, compass orientation, and local climate. By using an evaluation system given, you score the various categories. A final overall score is compared with a rating scale that tells you whether it makes sense to go solar with your house. This is a nifty way of getting at this sort of work, but I do wish the book had been published a little less slick at a little less price. Even so, it's a lot less than hiring someone, even assuming there is someone competent nearby to hire.

—J. Baldwin

Your Home's Solar Potential
Irwin Spetgang and Malcolm Wells
1976; 60pp.

$9.95 postpaid
from:
Edmund Scientific Co.
100 Edscorp Building
Barrington, NJ 08007

Informal Directory of the Organizations and People Involved in the Solar Heating of Buildings

Just that, with many foreign entries including Canada, Australia, France, and Great Britain. Includes Government Agencies. The author also brought us the excellent "Solar Heated Buildings, a Brief Survey" (EPILOG, p. 533).

—J. Baldwin

Informal Directory of the Organizations and People Involved in the Solar Heating of Buildings
William Shurcliff
1976; 118pp.

$5.00 postpaid (prepay, otherwise it's $7.00. He's trying to reduce hassle.)

$7.00 postpaid

Mail check to:
William A. Shurcliff
19 Appleton St.
Cambridge, MA 02138

Energy: The Solar-Hydrogen Alternative

If you wish to attend to where the possibilities of hydrogen are these days, this book will give you all but the very latest developments. There's a long way to go yet. This is a very scholarly presentation. At your library.

—J. Baldwin

Energy: The Solar-Hydrogen Alternative
J. O'M. Bockris
1976; 365pp.
$27.50 postpaid

from:
Halsted Press
John Wiley & Sons, Inc.
One Wiley Drive
Somerset, NJ 08873
or Whole Earth

PROPERTIES OF HYDROGEN WHICH MAKE IT MORE DANGEROUS TO HANDLE THAN NATURAL GAS

The reference substances in discussions of hydrogen safety are CH_4 and C_3H_8.

(1) The inflammability limits of hydrogen with oxygen are wider. Thus, hydrogen combines explosively with oxygen when the limits are between 4 and 75% hydrogen. Methane combines explosively with oxygen when the limits are between 5 and 15%.

(2) The ignition energy is lower, hence an explosion is more easily set off.

(3) Leakage is easier. The escape velocity of hydrogen is three times that of methane upon a volume basis. If hydrogen escapes to a closed space, it will exceed the explosion limit at 4% by volume in 0.26 of the time which natural gas needs to exceed its 5% threshold. On the upper side, it takes 1.6 times longer for hydrogen to pass the upper limit of 75% than for methane to pass its upper limit of 15%.

(4) The propogation velocity of a flame is 6 to 100 times more (dependent upon the amount of air present) for hydrogen than for methane.

(5) A hydrogen-oxygen flame is invisible.

(6) There is no Joule-Thompson cooling on expansion of hydrogen at normal temperature. When hydrogen escapes from an orifice, therefore, it gets hotter and may spontaneously ignite.

WAYS IN WHICH HYDROGEN IS LESS DANGEROUS THAN NATURAL GAS

There is a better side to hydrogen, in respect of safety, which reduces the weight of some of the negative points made above.

(1) The escape velocity: On a volume basis, the escape velocity of hydrogen is greater than that of methane. However, because hydrogen contains per unit volume three times less energy than does methane, escaping hydrogen brings with it only 0.93 as much *energy* per unit time as does methane.

(2) The energy of a hydrogen-oxygen explosion, which occurs at 4% by volume of a hydrogen-oxygen mixture, is one-quarter that of the corresponding methane mixture when it reaches its threshold at 5%. A hydrogen-oxygen explosion is hence less violent than that of a hydrogen-methane one.

(3) When hydrogen is released from a container into air, it rises, not only because it diffuses faster than methane, but because of its smaller density.

Propane and petrol are heavier than air. Their vapours remain near the site at which they are accidently vented. In practice, then, the likelihood of an explosion after an accidental venting of hydrogen into an open space is less than for propane. The hydrogen dissipates itself much more quickly than petroleum.

Craft

Earth Guild/Grateful Union

Quite an excellent East Coast craft mailorder catalog (also their store in Cambridge is worth using). Nice explanatory introductions to each craft and good selection of books, tools and materials. I especially like their "un-kits" – a bargain assembly of all you need to start in an unfamiliar craft.

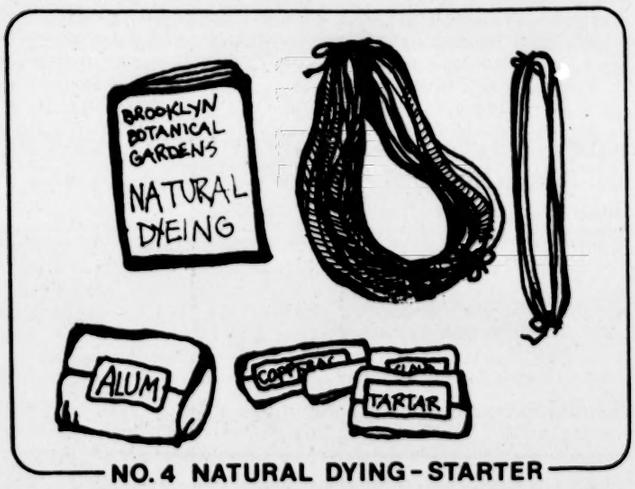
–SB

Catalog
$2.00 postpaid

from:
Earth Guild/Grateful Union
Mail Order Service
15 Tudor Street
Cambridge, MA 02139

Your tools may last your life – but you use up materials. Materials prices matter more than tool prices, though it may not seem so at first. Your friends, lovers, customers see only your materials, at the end. And ugly yarn or poor dye or inferior leather rarely makes a distinguished product.

We try for the best, therefore, in materials. Where the best is also expensive, we stock good but cheaper stuff as well. Where possible we have quantity price breaks. Materials cost is the killer for craftspeople – we're doing our best. Happy to take and give suggestions.



NO. 4 NATURAL DYING - STARTER

Your kitchen or the nearest vacant lot for the dyestuffs – Here is everything else you need to begin. The Brooklyn Botanic Gardens' handbook tells you how and where to gather dyestuffs (from onion skins to walnut hulls) and has clear mordanting instructions. We include these mordants: 1 pound alum (potassium aluminum sulfate), 1/2 pound cream of tartar (tartaric acid), 1/2 pound copperas (ferrous sulfate), and 1/2 pound glauber's salts (sodium sulfate). In addition we provide one of the following three – depending on availability: 1 ounce tin (stannous chloride) or 1/2 pound blue vitriol (copper sulfate) or 1/2 pound chrome (potassium dichromate). We add 1/2 pound of 100% wool yarn and pack it in a sturdy mailing box for you to give or get. This selection is not recommended for children without proper supervision. Some of the mordants are toxic.

12.50 POST-PAID

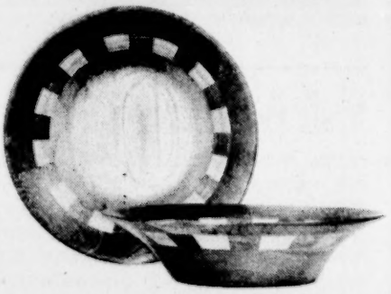
Fine Woodworking

Journals give you more information for your money than most books, and this one's a fine example – fascinating, informative, and handsome, too. Articles are precise, clearly diagrammed and photographed, with sources listed throughout. A sampling of the range of ideas and techniques covered in the first issue: turning the checkered bowls illustrated; care and making of handplanes; contemporary and traditional design; bench stones; birch plywood; marquetry cutting; a basic workshop. Well worth $8/year for 4 issues.

–Diana Sloat

Fine Woodworking
Paul Roman, Ed.
$8.00/yr (quarterly)
Single issue $2.50

from:
The Taunton Press
P.O. Box 355
Newton, CT 06470



The surface you are planing can be no truer than the bottom of your plane. You have two options in trueing up the bottom. One would be to take the plane to a machine shop and have its surface ground. This might cost about $20 to $30. The second option is to lap it yourself. This process is very simple and requires a perfectly flat piece of 1/8 or 1/4-inch glass at least 12 by 12 inches and some fine abrasive powder such as silicon carbide which can be found at many auto-body shops or art suppliers. Get both 400 grit and 600 grit.

About one-half teaspoon of the 400-grit powder is sprinkled on the glass with about one teaspoon of water. The plane bottom is placed on the glass and a figure eight grinding motion is used, keeping even pressure on the plane all the while. Use the entire surface of the glass to keep the wear even. In a short while the abrasive will become worn out and it will be necessary to rinse the plane and the glass in water and start again.

After repeating the process several times, inspect the bottom of the plane. The dips and hollows will show up as shiny spots not yet touched by the lapping. Continue lapping until they are eliminated and the entire plane bottom is uniformly grey. At the same time the plane bottom is being ground, so is the glass. So try to grind the glass uniformly to avoid making it hollow.

Once you've made your first plane, there's no limit to the different ones you can make. Here's a sample of those made by the author.

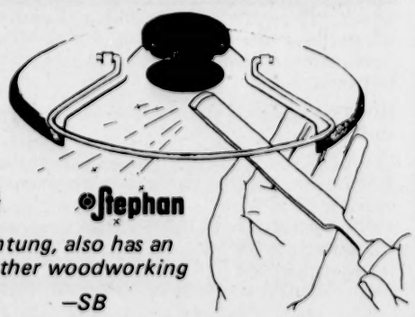
Stephan Invisible Wheel Grinder

Once in a great while a really new tool comes along. This is a grinder with a horizontal wheel that is actually a disc with slots in it so it "disappears" when in motion as does a propeller. This gives the remarkable advantage of letting the operator see the surface being ground away! Though I've not used one myself, I've watched. The control you can have is downright uncanny. Though expensive, there's a lot to be said in favor of machines that give human users good control. It's rare.

–J. Baldwin
[Suggested by Roland Gonzales]

Stephan Invisible Wheel Grinder
$249.95 postpaid

from:
Leichtung
5187 Mayfield Road
Cleveland, OH 44124



The distributor, Leichtung, also has an excellent catalog of other woodworking tools.

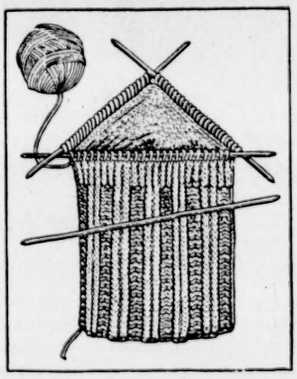
–SB

Mary Thomas's Knitting Book

With this book and the **Knitting Dictionary** *(CATALOG, p. 171) a good knitter needs no other patterns to knit anything in which she's interested. I stumbled on this book when I was trying to find a pattern to knit socks (something almost impossible to find nowadays). Mary Thomas not only has a chapter on knitting socks, including all the different methods of working heels, toes, tube socks and patterned socks; she also tells how to figure out all your own patterns for everything.*

She has bits of information which every experienced knitter would find of value: six different ways of doing a plain knit stitch and their uses; such things as: "Some guide to the correct size of needle to use with each different yarn can be obtained by folding the yarn once round the needle. Hold the two ends close together, close to the needle, without straining, and then remove the needle. The aperture so revealed should about equal in size that of the united width of the two yarns."

—Joanne T. Wright

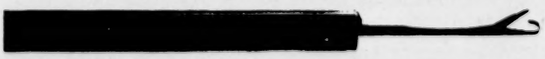


Mary Thomas's Knitting Book
Mary Thomas
1938; 256pp.
$2.50 postpaid
from:
Dover Publications, Inc.
180 Varick St.
New York, NY 10014
or Whole Earth

Fix-Nitz

Super little gadget! Works like a whiz on snags and dropped stitches. (No more jamming and coaxing those damnably short ends through a needle eye.) Looks and works like a tiny crochet hook, but has a hinged latch which opens all the way back onto its shank as you pass it through a material. Lay in the yarn end, the latch then flips firmly back over hook and yarn as you whip it back out through several loops of knitting or whatever. Wish all the loose ends of life could be so easily repaired. (Present model works well on fine to medium yarns. A second, slightly more expensive one will be double ended, with a larger hook and latch for handling bulkier yarns.)

—Diana Sloat



Fix-Nitz
$1.75 postpaid
from:
Excalibur Enterprises, Inc.
800 W. 47th Street
Kansas City, MO 64112

Sharpening

I like this sharpening book the best of any I've seen because it tells you why you're doing it the way they suggest so you really learn something, and it only costs a buck.

—J. Baldwin

A Manual on Sharpening Hand Woodworking Tools
J. K. Coggin, L. O. Armstrong, G. W. Giles
48 pp.
$1.00 postpaid
from:
The Interstate Printers and Publishers, Inc.
Danville, IL 61832
or Whole Earth

The Crafts Fair Guide

Funky and useful: ratings and comments on western crafts fairs (mainly California) by crafts people who've participated. Covers fees, attendance, promotion, site conditions, etc. Costs $10 (with 10-day money-back guarantee) for 2 large issues, but could easily save you that on an entrance fee and a dog of a weekend. Comes out twice a year, October for the January-July fairs, and May for the August-December ones. Good idea getting organized. I just like the crazy thing after sitting through some awful times doing fairs.

—Diana Sloat

Crafts Fair Guide
Lee Spiegel, Ed.
1975; 75pp.
$10.00/2 issues
from:
Crafts Fair Guide
P.O. Box 9132
Berkeley, CA 94709

May 4, 1975
SARATOGA: 18th Annual Saratoga Art Festival. In bank and shopping center parking lots: clear & Windy
COST: $25 plus 30% (central cashier)
ATTENDANCE: High
RATING AVERAGE: 8.9 (1974 - 10)
WOULD YOU RETURN? Yes - 11, No - 1, ? - 1
COMMENTS ABOUT THE FAIR: "Difficult to get into. Screening takes place in Jan. or Feb. Marilynn Linn is juror and rough. Getting in is worth the hassle and expense. You just jack up your prices to handle the extra commission" . . . "The high commission made my prices too high" . . . "Chances of selling reduced by 30% unless you take a bath and swallow the 30%" (5)

"The commission was high but the sales were terrific" . . ."Cost to craftsmen too high" . . . FOOD? "Yuk" . . ."Bad" . . . "Many customers show up as you're unpacking."
COMMENTS ABOUT PROMOTER: (Saratoga Rotary & Marilynn Linn, 13290 Pierce Rd., Saratoga, CA): "Very well organized, very helpful with loading and unloading" . . . "Very helpful and well organized" . . . "Very efficient" "1975 was their 18th annual show. They've had lots of practice and it showed. This year the sales total was $140,000 for a one-day show!" . . . "Fair. Helpful to the craftsmen and artists. Put on a consistently good show. Could use better and more creative food."

Folkwear Gaza Dress

"Bedouin Dresses" are very beautiful. They're made by each woman for her wedding and to wear on festive occasions for her lifetime. To have sold hers to a dealer meant times were hard. So if you have one, wear it with love and appreciation. And if you don't, MAKE ONE! The pattern's here, adjustable, and on sturdy paper. The layout and sewing instructions are much clearer and more detailed than ordinary commercial patterns. And it includes 2 actual-size embroidery panel patterns in traditional designs with the names and explanations of the origins of the figures, colors used, etc. A fine idea, very professionally and sensitively done. Write for other of their Middle East and Mediterranean patterns as well.

—Diana Sloat

Folkwear Gaza Dress
$4.00
postpaid
(plus tax)
from:
Folkwear Ethnic Patterns
Box 98
Forestville, CA 95436

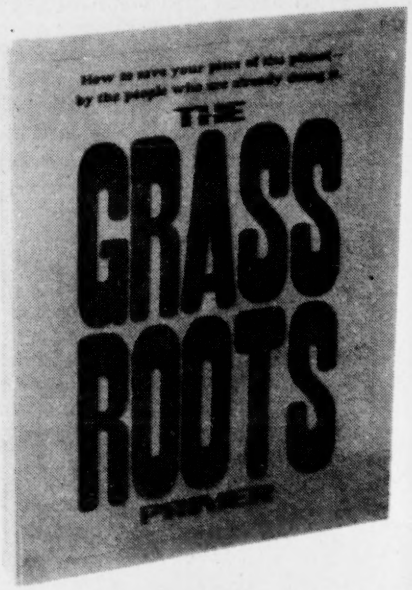
The Grass Roots Primer

Battle-proven techniques for fighting entrenched bureaucrats, illustrated by horrendous case histories. A very fine how-to section follows the case histories. It should be very useful for forming battle plans and for preventing strategic and tactical errors, especially by those just getting into fighting the (allegedly) unfightable. The price, unfortunately, reflects a certain ambiguity in the Sierra Club: they seem to be unable to decide whether getting information to the people is or is not more important than making money by publishing. A book like this is so useful and so deadly that it seems a shame to tack such a high price on it. Many of those who could put it to good use can't afford it.

—J. Baldwin

An increasing number of labor organizations are joining with environmentalists, and many environmentalists are workers as well. The Builders Labourers' Federation of Sydney, Australia has gone so far as to impose *"green bans,"* strikes to halt developers from destroying urban natural areas.

The Grass Roots Primer
(How to save your piece of the planet — by the people who are already doing it.)
James Robertson and John Lewallen, Eds.
1975; 287pp.
$7.95 postpaid
from:
Sierra Club Books
c/o Book Warehouse, Inc.
Vreeland Ave.
Totowa, NJ 07512
or Whole Earth

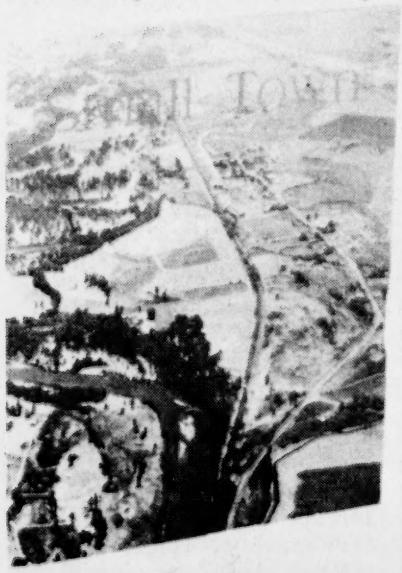


Bumper stickers like these — in three languages — helped Arizona environmentalists convey the idea that San Francisco Peaks meant something more than another wilderness to be saved. Top sticker bears the Hopi name for the area, the middle one that of the Navajo people.

Small Town

A little magazine bound to be useful to any community large enough to have a town hall. It's about character, controlled growth, and planning.

—SB



Small Town
Clayton C. Denman and Anne Smith Denman, Eds.
$ 15.00 /yr (12 issues)
from:
Small Towns Institute
P.O. Box 517
Ellenburg, WA 98926

The planning environment of small towns as distinguished from cities usually involves:

1. a small circle of decision makers who can be easily reached if not easily persuaded;
2. a slower tempo of development pressure;
3. a greater proportional impact of major development if it occurs;
4. fewer resources (staff, libraries, research capabilities, and consultants) to cope with major planning problems when they arise;
5. less reliance on government and more of a *laissez faire* attitude by citizens and their representatives;
6. less power of organized environmental and consumer groups (which often are closely affiliated with public planners).

Back to the City

Back to the City *is currently functioning as a clearinghouse for information on urban rehabilitation and preservation. As such, we are able to put local community groups and neighborhood workers from all parts of the country in touch with information and restoration projects aimed at preventing the further deterioration of urban neighborhoods. Our goal is to educate existing inner-city residents to the value of their homes and neighborhoods (both architectural and cultural value), and to encourage a return to the city of additionally stabilizing groups. Membership costs $5 for individuals. $25 for organizations.*

Betty Fluegelman Kahn
Executive Director

The book is an encouraging collection of experience in restoring various cities. The restorers have broad advice to offer.

—SB

Back to the City
(A Guide to Urban Preservation)
1975; 80pp.
$5.00 postpaid
from:
Brownstone Revival Committee
12 E. 41st St.
New York, NY 10017

The house tour is our most effective instrument for "selling" a community. Very few people are willing to be pioneers, but if you show them there are other settlers, you'll get buyers.

Gestalt Prayer

The original, by Gestalt psychologist Fritz Perls, goes like this:

I do my thing, and you do your thing.
I am not in this world to live up to your expectations
And you are not in this world to live up to mine.
You are you and I am I,
And if by chance we find each other, it's beautiful.
If not, it can't be helped.

Recently a variation appeared in the Bolinas Hearsay News:

THE GESTALT PRAYER

I do my laundry, and you do yours.
I am not in this world to listen to your ceaseless yammering,
And you are not in this world for any discernible reason at all.
You are you, and I am I, and I got the better deal.
And if by chance we find each other, it will be unspeakably tedious.
Fuck off.

—Annie Lamott
Bolinas, California

The Texas Observer

I haven't been this enthusiastic about a periodical since I picked up a copy of the now defunct PLACE Magazine *in a Cambridge, Mass. bookstore in 1972. I've been hearing about the* Texas Observer *for years, ever since* PLACE *published "Texas Observed," by Molly Ivins, currently an editor for* T.O. *It seems that politics in Texas couldn't be more twisted and hilarious than politics in any other state, but you'd never know that based on what you can read in here. It's filled with great journalism liberally seasoned with a quality of comic relief that is unequalled elsewhere.*

—Jeanne Campbell

The Texas Observer
(A Journal of Free Voices, A Window to the South)
Kaye Northcott, Ed.
$10.00 /yr.
Published bi-weekly
from:
The Texas Observer
600 W. 7th St.
Austin, TX 78701

THE TEXAS OBSERVER
April 23, 1976
Potter County politics
Amarillo Slim in odd game

In the old days, a group used to meet at the Amarillo Club every day around noon — leadin' citizens one and all — and play poker. Win, lose, maybe $20, $30,000 in an afternoon at those games. Stanley Marsh 2, Stan Blackburn, some Bevinses and maybe Whittenburgs. That game has long since broken up. But the heirs still play; second, third generation now. Mayhap they haven't the yeast of their forebears; mayhap they try too hard to prove they have. Anyway, when Slim won his poker championship in '72, they called him up and asked him over to play with them. He beat the livin' go-whump out of all 'em. It was the vogue thing for a spell in Amarillo to brag, "I dropped a thou to Slim the other night."

•

Not since the civil rights movement have our regional prejudices been so set a-twanging by Yankee news coverage of a Southern phenomenon. As we read Northern journalists on the subject of Jimmy Carter, we remember that old feeling — even when they get it right, they get it wrong.

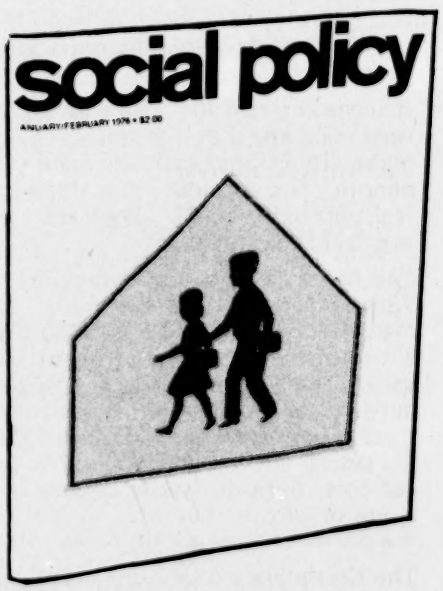
Mother of pearl, here we find otherwise intelligent journalists explaining to an eager public that even though a man talks slowly, his mind may work quickly. A death-defying insight. Then we get Sally Quinn interpreting Southern Manhood, with references to Faulkner and Tennessee Williams. "There is military discipline and hardness combined with a politeness and gentleness, a sense of duty combined with manners and deep religious faith indigenous to Southerners. He has the kind of dignity about him, too, that is special to Southerners — the God-and-woman, the officer-and-gentleman dignity." Lawsy, lawsy, Miss Sally. Ah don't know nothin' 'bout birthin' baybies.

Social Policy

A magazine by and for liberals dubious about liberal programs. It actually checks on performances.

—SB
[Suggested by Edmund G. Brown, Jr.]

Social Policy
Frank Riessman, Ed.
$10.00 /yr (5 issues)
Single copy $2.00
from:
Social Policy
Suite 500
184 Fifth Ave.
New York, NY 10010



The state should have the right to bring children into a school or school district in numbers that will not disrupt the educational programs of the community, and this right should not be subject to veto by that community or neighborhood, but the state should not have the right to assign a child to a school distant from her/his home on grounds other than his/her educational benefit (i.e., not in order to achieve racial balance).

—James S. Coleman

THREE POLITICAL IDEAS

by Paul Maag

Urbanology

Filling public office by electronic roulette, as Mike Phillips suggested in the Fall '75 CQ, would give us an exact sample of the public they are picked from, locally, state or national. I mentioned this to a black politician as a way for the blacks to get their 12 or so percent of the action. Oh! No, I'd be out of a job, was his reply. Your article ruling out mentally ill was fine but this rule out is not necessary. The state of Washington sent a nutty Congressman, Zioncheck, to Washington who eventually committed suicide. Since then Ike picked a mental cripple for the Supreme Court who could not even decide which suit of clothes to wear. One in 435 or one in 9 can not do too much damage for long.

An electronically selected random legislature will have the exact perspective of the populace represented, but will they listen? The present elective ones do not. Testing gives the best answers.

Our entire system needs restructuring since you can not change anything without changing its structure. I saw a beautiful iso-demo map of Canada at the McGill map library. It was a thesis for an advanced degree. Does any one know of a similar people map of the U.S.? The cities were big and the country was small and practically linear. We are about 75% urban. So what is needed is a people map of the U.S. This will show graphically that the colonies evolved into cities and NOT states as the beatle-haired Big Daddies postulated. The Canada (from the Huron Indian word Kanate for community) map was made by equating a finite population per square inch. 1/8 inch ball bearing balls were used each representing an equal number of people. These were bounded by flexible 'fences.' Real boundaries between city and country were approximated by the flexible fences. Thus spacious values were held quite well and One man, One space held exactly.

If some enterprising 'Usan' would do likewise, it would be very apparent that our states are obsolete. Urbanology would make city/county/capitols since they are closest to the most people. The spacious farm areas could get together as they feel best befits them. Every square foot would be run by the feet standing on it.

The Black Chamber of Commerce met here in Boston in a 75th anniversary as the National Business League. Congressman Fredrick Richmond of Bed-Stuy, who had rebuilt an entire block in Harlem before he was elected to Congress, spoke. He said the urban and farm Congressional blocks need to get together. This coalition would be automatic if state lines were picked up and discarded. Suburbs where the power and the money is now exist because of state capitols. Suburbs would choose between urbanology, go it alone or join the farmers. In each case they would not be the parasites they are on cities today.

The Conference of Mayors met here recently after a meeting in San Francisco. They said the same things over again. It is a peripatetic gripe session. The French mayors are also seated in the National Assembly where they can affect city problems and their solutions. If we have that structure here, the Congress would be an ongoing conference of mayors.

The House and Senate could meet as Joint Committees as wholes. This would give us a unicameral Congress. 31 nations operate that way. This would be constitutional and efficient. All 535 arguments on a bill will be heard by all Congress. The House of Commons has 635 members and no veto vulnerability. The House of Lords has no power and the monarchy is a ritual. If I were on trial for my life, I would want a good who-dun-it writer to head my defense and then a good legal beagle to back him up.

•

Share the Work

Share the Wealth used to be a battle cry. Now a more practical one would be to Share the Work. This also can be done with electronic roulette. Every six months the computers furlough a number of employed people equal to the army of the Unemployed who march into their vacated jobs. In another six months there is another rotation of duty as the Army calls it.

There was an idea by a Columbia U man who proposed a 30 hour week done in 3 days. Monday, Tuesday and Wednesday. At the end of the Wednesday shift he got into his car pool and drove thru the city and suburb and into the country where his family had been all the time. He is replaced Thursday morning by some one who has driven in from the country who also works Friday and Saturday before he again drives home. Production goes 60 hours by two men for each job. The factory needs hostel accomodation and food service for the two nights each. All workmen spent 5 nights and 4 days each week at home in the country. The ten hassles to and from work each conventional workweek is cut to one round trip per employee.

•

Simple Commerce

A bill filed with the Massachusetts Legislature in both houses of the Legislature by a citizen in a free society exercizing his right of free petition.

Submitted by Paul Maag, Somerville, Massachusetts.

A Bill to be known as the Simple Commerce Act of 197-.

Article 1) In all commercial transactions involving the transfer of cash from the buyer to the seller, the second figure to the right of the decimal point separating dollars ($) from cents (¢) shall be altered as follows:

3, 4, 5, 6, or 7 shall be 5 or a nickel coin
8, 9, 0, 1, or 2 shall be 0 or a dime coin.

This removes the necessity of using copper in the commercial transactions in the State of Massachusetts. A 1,000 or 100 or even ten transactions will total the same amount as to handle all of the pennies as is now being handled by the billions. This is a major step in simplify-ing the buy-sell, pay-collect of commercial flow of goods and moneys.

Article 2) In all commercial advertising, the seller is to be limited to using only three significant figures. It is the numbers up front that count. Commercial arts are not accurate to 4 significant figures which imply one part in 10,000.

Article 3) In the sale of gasoline, prices shall be limited to TWO significant figures. This eliminates the 'fine print' of sellers use of a microscopic sized decimal 9 to mislead the buyer. If the price of gasoline reaches a dollar per gallon, three significant figures can be used so as to prevent the prices from jumping by the dime if the rule was to limit all prices to 2 figures. Basically, this article of the Simple Commerce Act is to make it illegal to advertise the obsolete monetary term of the mil which the .9 in the miniature implies.

Article 4) This article will establish the concept of the Costax and the Admitax. Sellers of goods, services or admissions shall advertize ONE figure. This shall include all taxes or fees that go along with the prices heretofore advertized.

Article 5) Along with Article 4, this article establishes Associative Tax computation. It is so-called as it follows the Associative postulate which is fundamental to Algebra.

The associative law of algebra is as follows:

$$Ax + Bx + Cx + Dx +, +, +, \text{etc} = x(A + B + C + D +, +, +, \text{etc})$$

In application to commercial activities, x represents the tax rate. The left hand part of the equations represents the existing way in which taxes are computed and collected. Each item of billions sold requires a tax determination. These taxes are added as the left hand plus signs imply.

The right hand member of the equations shows how simplicity can be had. Goods, services, admissions are simply sold as costax and admitax. Sales, service and admission clerks are relieved of computations. These charges are totalled daily or weekly and the Tax is computed ONCE and only once. Simple Commerce.

•

Maybe the legislatures should limit themselves to the bills submitted by the Taxpayers or non office holders. Then maybe people could get some faith in the 'Servicement.' ■

A Manual of Cooperative Games

A short treatise on theory and practice of cooperative games — the theory more interesting to me than the practice in this particular collection. Suggestor Olson comments on the author, "It was Ted Lentz, whose book **Towards a Science of Peace** *turned on people like Ken and Elise Boulding and started off the whole peace research movement back in the mid-fifties."*

—SB
[Suggested by Robert Olson]

All Together
(A Manual of Cooperative Games)
Theo F. Lentz and Ruth Cornelius
1950; 18pp.

In exchange for contribution to:
Peace Research Laboratory
6251 San Bonita
St. Louis, MO 63105

Why not experiment with games which are designed in an attempt to develop cooperative attitudes? These games might differ from the games as we have known them in that:

1. All participants strive toward a common goal, working with each other instead of competing against each other.
2. All players win if the goal is attained, or all lose if the goal is not attained.
3. All players compete against the non-human elements of the game rather than against any players.
4. Players do not play identically, necessarily, but unitedly in an effort to reach the common goal.

•

SIMULTANEOUS FINISH.

In some cooperative games the underlying principle is for all players to finish simultaneously. For example, in Cooperative Chinese Checkers, the goal is for all players to place their last marble into home-place the same round for all players.

COORDINATED MANIPULATION.

This is a principle underlying some of the cooperative games in which all players attempt to coordinate their timing and execution with other members so that a smooth pattern of manipulation results.

ROTATION.

In some cooperative games each player takes a turn at the sequence of the game, responsible for one step or phase indispensable to the final or progressive goal.

EQUAL DIVISION.

This principle underlies some of the games. Players attempt to play so that the score or objects of the game come to be equally divided among the players by the time the game is over.

PREDETERMINED SCORE.

In some of the games the goal set up for the game is a total score toward which players make combined effort to achieve.

•

COOPERATIVE CHECKERS

In Cooperative Checkers, the two players aim to change the black checkers and red checkers to opposite sides of the board at the same time. The game follows the usual checker rules, except that there is no jumping or moving backwards. The game is won if the checkers are changed to opposite sides of the board at the same time.

•

BLANKET TOSS

Several players stand around holding the edges and corners of a cloth. A hole big enough for a balloon to fall through has been cut in the cloth. Several different sized balloons are placed on the cloth. Players toss the balloons up into the air by jerking the cloth. They attempt to move the cloth in such a position so that the balloons will fall through the hole. Players can determine scores for the various balloons, giving lower scores to the smaller balloons. All players together attempt to attain the goal of having the balloons fall through the hole.

Family Pastimes

Here's a whole little catalog of cooperative games. Cheap. Might be good; haven't tried them.

—SB

Catalog Free

from:
Family Pastimes
RR4
Perth, Ontario K7H 3C6
Canada

COMMUNITY

A Board Game, ages 12 up, 2 to 12 players (4 best)

Our new board game, COMMUNITY, another in the series of co-operative games we're making is now available. You'll enjoy working together with the other players to make a happy, complete community. You'll start your day and go around the board encountering problems, hardships, opportunities, successes, and joys. You'll help each other through BAD FEELINGS and upsets, so that if you succeed in building a community, you will all win together. Try our new game. It's ideal for family get-togethers, recreation groups, children's clubs — for adults and children, ages to 100.

There is a large board, 25" x 19"; a 12 page GUIDEBOOK; varnished wood tokens; counter cards; event cards; all in a handy, silkscreened box, suitable for storage.

$8.25 per set, postpaid.

Philip Garner

Ray Murray

Le Mans (running start) Tug o' War. An improved version has the two teams running toward and through each other before they can pick up the rope.

Theory of Game-Change

BY STEWART BRAND

YOU CAN'T CHANGE A GAME BY WINNING IT, goes the formula, OR LOSING IT OR REFEREEING IT OR SPECTATING IT. YOU CHANGE A GAME BY LEAVING IT, GOING SOMEWHERE ELSE, AND STARTING A NEW GAME. IF IT WORKS, IT WILL IN TIME ALTER OR REPLACE THE OLD GAME.

Of course that's only true when you start. Once you restore the children's habit of always messing with your games, then it is the playing of the game that directs the change. A new game begins in a flash, usually, and then grows by degrees.

But grows toward what? Define "better game."

Mostly, I would say, you don't have to worry about this. A "better game" will compel you to play it and refine it. A lousy game will rapidly evaporate for lack of players.

So why bother with theory? All I can answer with is a piece of natural history – the design of one of the

Andrew Fluegelman, Business Advisor of **The CQ**, *has been working on a book for the publishing house he co-founded, Headlands Press (Doubleday will distribute). The book assembles some 60 of the best "new games" that have turned up since our first New Games Tournament in 1973. As organizer of that event I was asked to contribute something to the book. I said I would if we could print some of the photos from the book. Done.*

–SB

The New Games Book
The New Games Foundation,
edited by Andrew Fluegelman
1976; 192pp.
$4.95 postpaid
from:
Doubleday & Company, Inc.
501 Franklin Avenue
Garden City, NY 11530
or Whole Earth

Also available from:
The New Games Foundation
Box 7901
San Francisco, CA 94120

Ray Murray

Tug o' War over a creek leads to acrobatics.

Jim Morgan

Boffers (foam sabres) tap a deep mythic vein.

most compelling new games of the 20th century, as recalled by its inventor.

The game is Space War. It is a game played with computers. It first appeared in 1963, almost instantly proliferated to all computer centers in North America, and still, thirteen years later (a century in the mercurial world of computer design) Space War has not been supplanted as the most popular computer game.

It hasn't even changed much from its initial design. You have a TV-like screen on which are displayed tiny rockets which are controlled by the players. The rockets can accelerate, turn, and fire torpedoes. When a torpedo and rocket meet, both disappear in an attractive explosion. Often there is a central "sun" on the screen around which everyone orbits (with Keplerian exactness – the closer ones faster). And there are optional additional features such as partial damage, score-keeping and "hyperspace" (where you can escape in desperation – disappear from the screen for a few seconds and then return at a random location, but with a hazard of perishing in hyperspace that increases each time you use it).

Not long ago I was so impressed with the design of Space War that I tracked down its inventor, one Steve Russell. It seems that in 1963 he was just a computer bum in his early twenties employed at MIT's Project MAC (Multiple Access Computer). Here's how he recalls the origin of Space War.

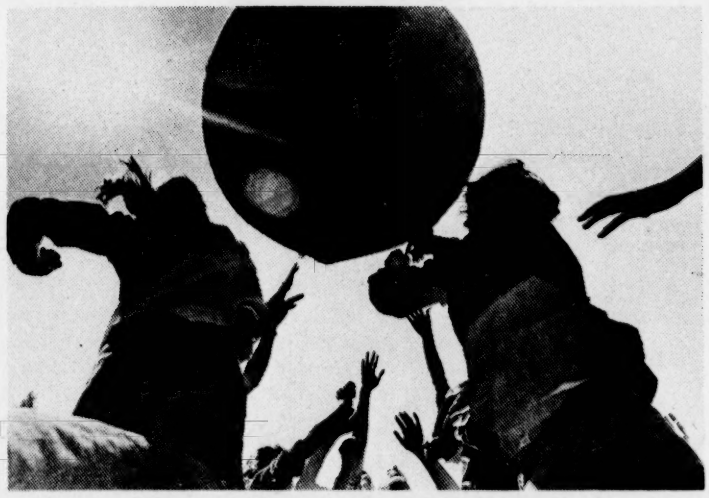
"We had this brand new PDP-1. It was the first minicomputer, ridiculously inexpensive for its time. And it was just sitting there. It had a console typewriter that worked right, which was rare, and a paper tape reader, and a cathode ray tube display. Somebody had built some little pattern-generating programs which made interesting patterns like a kaleidoscope. Not a very good demonstration. Here was this display that could do all sorts of good things! So we started talking about it, figuring what would be interesting displays. We decided that probably, you could make a two-dimensional maneuvering sort of thing, and decided that naturally the obvious thing to do was spaceships."

Naturally?

"I had just finished reading 'Doc' Smith's **Lensman** series. He was some sort of scientist but he wrote this really dashing brand of science fiction. The details were very good and it had an excellent pace. His heroes had a strong tendency to get pursued by the villain across the galaxy and have to invent their way out of their problem while they were being pursued. That sort of action was the thing that suggested Spacewar. He had some very glowing descriptions of spaceship encounters and space fleet maneuvers.

"By picking a world which people weren't familiar with, we could alter a number of parameters of the world in the interests of making a good game and of making it possible to get it onto a computer. We

Jim Morgan

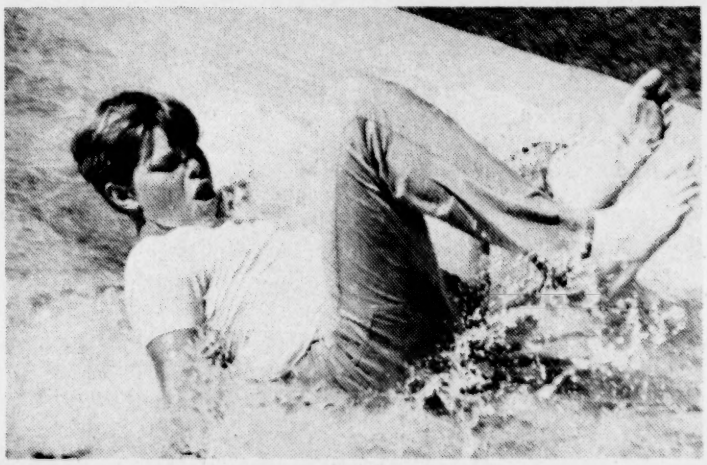


Ed Buryn

When the six-foot Earthball descends it fills the sky.

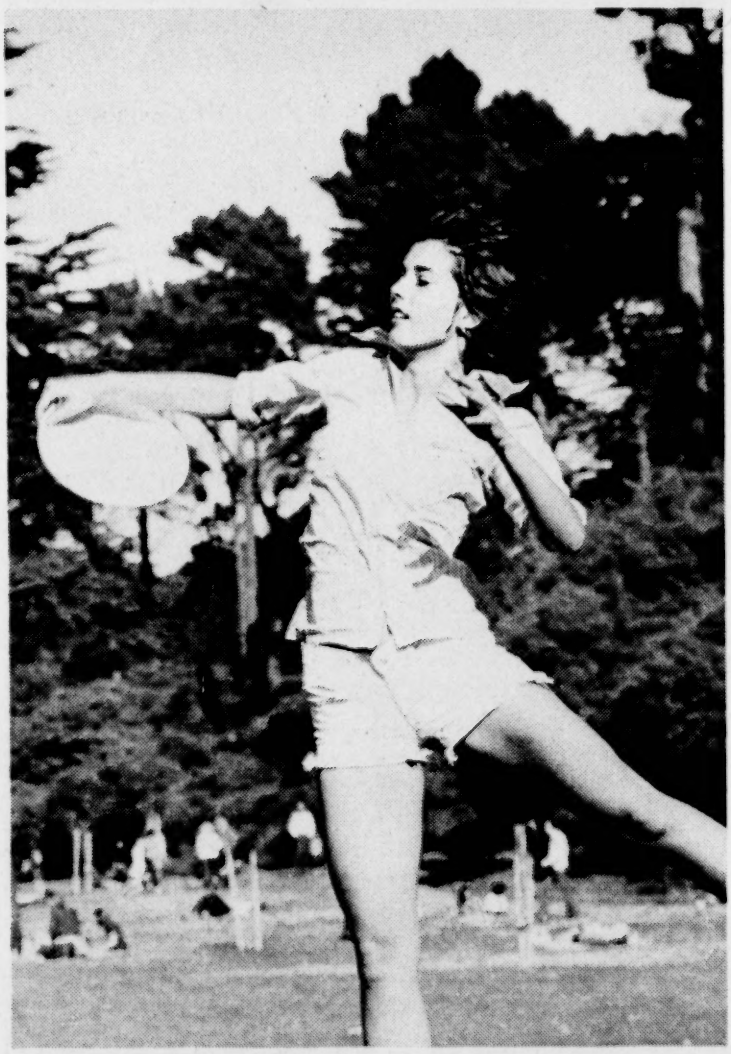
Andrew Fluegelman

Playing Ooh-Ahh – a circle game.



Ray Murray

Scrap your pride, take a ride on the water slide.



Andrew Fluegelman

made a great deal of compromises from some of our original grand plans in order to make it work well.

"One of the important things in Spacewar is the pace. It's relatively fast-paced, and that makes it an interesting game. It seems to be a reasonable compromise between action – pushing buttons – and thought. Thought does help you, and there are some tactical considerations, but just plain fast reflexes also help.

"It was quite interesting to fiddle with the parameters, which of course I had to do to get it to be a really good game. By changing the parameters you could change it anywhere from essentially just random, where it was pure luck, to something where skill and experience counted above everything else. The normal choice is somewhere between those two. With Spacewar an experienced player can beat an amateur for maybe 20 to 50 games and then the amateur begins to win a little.

"Something which I wanted to do is get some interesting sort of fleet action. There are some versions of Spacewar which allow multiple ships, but as far as I know no one has been sufficiently clever to set things up so there are ships with noticeably different characteristics that could fight in interesting combinations."

That I would call damned intelligent use of theory.

Or maybe a better word is "attributes." Russell identified the attributes of a good computer game and tied them together. "Tie them together" I think means assemble them into a dramatic story, open-ended, starring the player.

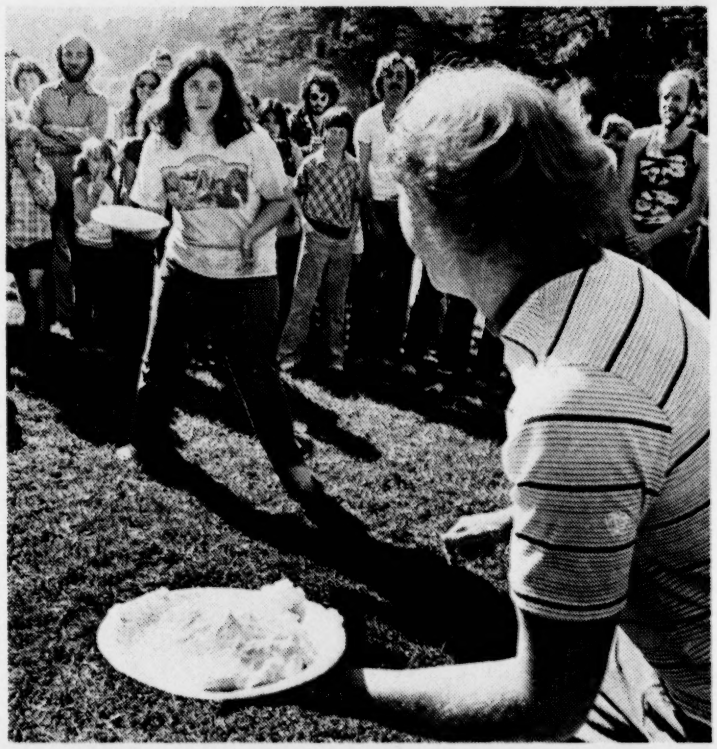
When I designed the game Slaughter, which appears in this book, there were certain attributes I was after to jolly and jolt my client, the War Resistor's League at San Francisco State College. I wanted something *violent but not harmful*. (It turned out that bodily pulling is safer than pushing or hitting – hence in Slaughter players are on their knees pulling opponents toward the lethal boundary).

I wanted a *mêlée quality* in Slaughter – everyone simultaneously vulnerable, dangerous, and in combat. I wanted it to be *multi-leveled* – hence both the eliminating opponents and the ball-in-goal features.

[more →]

Ray Murray

Aikido people aren't allowed to compete. "Dho dho dho" was invented so they could.



Ed Buryn

Pieing – according to the International Codified Rules of Pie Fighting.

All these attributes were to serve the grander one of *intensity* – a game so multiple and fierce that the player is simply lost in it. To up the intensity still further, the game was expressed in life-death *metaphor* – "any part of your body over the line and you're dead."

That's the creative use of attributes. Let's see what happens when we try analysis, look at existing good games and shake out what they have in common. Here's my list this time. It's suggestive, not comprehensive. I don't know if it could be any use at all in designing games.

Forgiveness. Volleyball is wonderfully forgiving – any fool can learn the rules and become sufficiently adept almost immediately. People of widely varying skill can play easily together. Teams can be three people or ten. The court can be any old size, the net any height. Compare all those qualities with, say, tennis, which is no fun at all except on a proper court, with enough skill to return the ball (no cinch), and an almost equal opponent.

Suspense. In a suspenseful game the issue not only remains in doubt, it increases. The ante goes up. (Indeed, the growing pot in poker is a nice example.) Keeping the issue in doubt may require some of Russell's randomness, so the mighty can fall and have to scramble to recover. Suspense implies climax, which can be drawn out deliciously. The endless last two minutes of professional football. The requirement when you tie in volleyball at 21 - 21 that you have to win by two points. Kick-the-can, when the last free player can still break out all the prisoners.

Keen competition. I am not one who thinks competition is bad, though I agree over-obsession with losing or winning can be. It is being well-matched that makes a game take off. In a game that pits your everything against a marvelous opponent you can surpass yourself so far that you never quite return. How does this effect game design? Suppose you have evenly matched volleyball teams that are mixed in height and ability. Arrange the rotations so that the tall players always face each other at the net and the short ones ditto.

Wit. A game with this attribute is capable of turning inside-out at any point. Hyperspace in Space War is a witty feature. The forward pass in football, ever vulnerable to interception, forcing defensemen to run and block and the quarterback to tackle – from expert against expert, suddenly the game is amateur against amateur. There's a certain wit to Hunker-Hawser in this book – you can win by pulling the rope or letting ir run, depending on what the other player is doing. It's like a joke. The game builds the story. Whoever has the punchline wins.

Ritual. For me the only appeal of baseball is its ritual. The business with the bat deciding which team bats first, the stylized infield chatter, the measured slow pace and sudden action. A game that lasts has got to have ritual, the interaction of repetition and surprise, an irrational mythic depth. There's a book you should read, **Homo Ludens** – a study of the Play Element in Culture, by Johan Huizinga ($2.95 from Beacon Press). Here's a sample.

> Play begins, and then at a certain moment it is "over." It plays itself to an end. While it is in progress all is movement, change, alternation, succession, association, separation. But immediately connected with its limitations as to time there is a further curious feature of play: it at once assumes fixed form as a cultural phenomenon. Once played, it endures as a new-found creation of the mind, a treasure to be retained by the memory. It is transmitted, it becomes tradition. It can

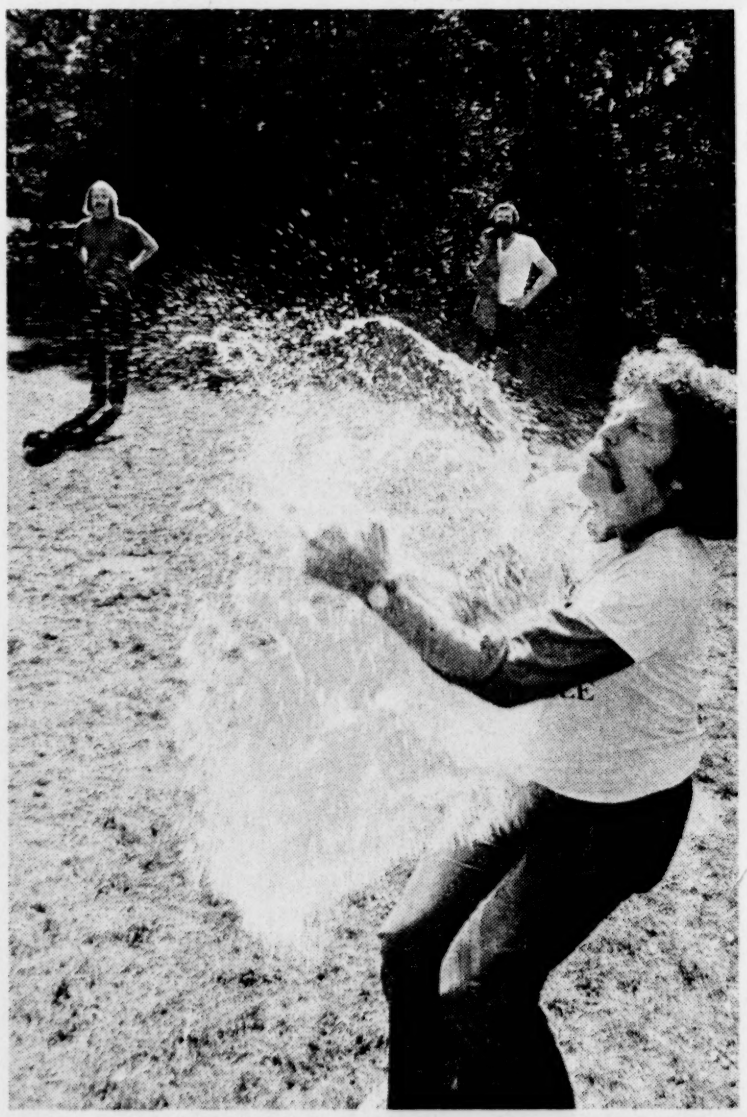
Ed Buryn

'Pakistani' has wit. The chaser can touch any of the crouching people to take over the chase, and depending on which direction they're crouching, they can suddenly reverse the direction of pursuit.

be repeated at any time, whether it be "child's play" or a game of chess, or at fixed intervals like a mystery. In this faculty of repetition lies one of the most essential qualities of play. It holds good not only of play as a whole but also of its inner structure. In nearly all the higher forms of play the elements of repetition and alternation (as in the *refrain*), are like the warp and woof of a fabric.

More striking even than the limitation as to time is the limitation as to space. All play moves and has its being within a playground marked off beforehand either materially or ideally, deliberately or as a matter of course. Just as there is no formal difference between play and ritual, so the "consecrated spot" cannot be formally distinguished from the play-ground. The arena, the card-table, the magic circle, the temple, the stage, the screen, the tennis court, the court of justice, etc., are all in form and function play-grounds, i.e., forbidden spots, isolated, hedged round, hallowed, within which special rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an act apart.

Inside the play-ground an absolute and peculiar order reigns. Here we come across another, very positive feature of play: it creates order, *is* order. Into an imperfect world and into the confusion of life it brings a temporary, a limited perfection. Play demands order absolute and supreme. The least deviation from it "spoils the game," robs it of its character and makes it worthless. The profound affinity between play and order is perhaps the reason why play, as we noted in passing, seems to lie to such a large extent in the field of aesthetics. Play has a tendency to be beautiful. It may be that this aesthetic factor is identical with the impulse to create orderly form, which animates play in all its aspects. The words we use to denote the elements of play belong for the most part to aesthetics, terms with which we try to describe the effects of beauty: tension, poise, balance, contrast, variation, solution, resolution, etc. Play casts a spell over us; it is "enchanting," "captivating." It is invested with the noblest qualities we are capable of perceiving in things: rhythm and harmony. ■



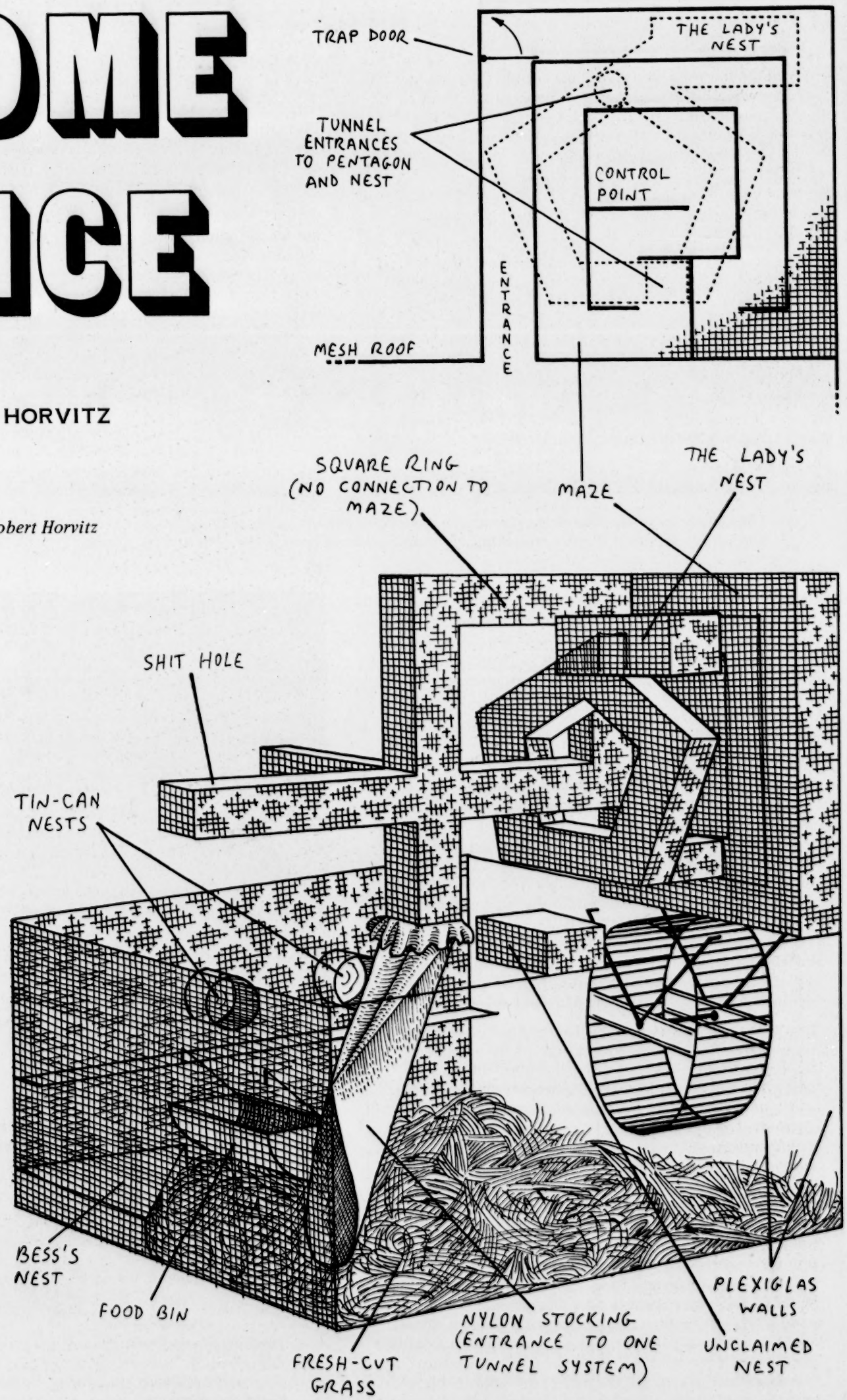
Ed Buryn

Andrew Fluegelman, the assembler of **The New Games Book**, *losing a version of Egg Toss which uses water balloons. No doubt his book project feels the same some days.*

SOME MICE

BY ROBERT HORVITZ

Illustration by Robert Horvitz



When our lease on the beach-house was up, we decided to divide the mouse colony: anyone could take some mice with him when he left, and any left over would be let go in the field next door. I picked two, the extremes of the litter. One was the bully, a handsome and aggressive mouse named Brown. The other was the runt. I named him God. God was black and white, quite small and high-strung. He was always hunched over in fear of being attacked, as indeed he had been under attack by other mice all his life, simply because he was the smallest.

In their new cage, Brown immediately made it clear to God that he would be allowed to live only so long as he obeyed Brown's wishes. He cornered God and nipped at his balls and bit him on the base of his spine until all the hair there was gone. With no other mice around, and food appearing effortlessly, Brown had nothing else to do but manage God's existence. He laid down an impossible code of behavior and punished all infractions severely. God got very thin because Brown punished him for eating; his legs got stiff because Brown wouldn't let him run on their treadmill.

After a couple of weeks I bought two females at a pet store, hoping their presence would lessen the tension between the two males. One female died mysteriously her first night in the cage. Both God and Brown were fascinated with the one who survived, but Brown became even more oppressive, attacking God whenever she was nearby. The Lady was a "waltzing mouse," a breed with a peculiar waddling walk. While Brown was away at the food dish, God would sneak out from his corner to smell The Lady's vagina, but she would usually squeal and Brown would come rushing over. God got so he could make a quick trip out and back before either of the others knew what had happened. Brown's suspicions were aroused by finding The Lady's scent on God's whiskers and he began punishing God constantly, just in case he had done something he wasn't supposed to, or in case he might have been considering it.

Under this redoubled pressure, God could not get to the food dish at all. After a week of harassment and starvation, I intervened by slipping food directly to him through the wire mesh wall of the cage. He was afraid at first to accept anything because he knew that Brown would smell it on his breath and punish him. But after a day or so he gave in to temptation.

This back-fired. Brown seemed to get the idea that God had found a way of conjuring up food; thereafter he never left God's side, hoping to either catch him in the act of making food or, better, get the food for himself.

The Lady had not lessened the tension between the males. The only other thing I could think of was to isolate Brown for a few days to allow God to recuperate from his life of routine torture. I lured Brown into a wire mesh tunnel with peanut butter and then barricaded the tunnel.

God noticed Brown's absence right away. He stayed in his corner the whole first day, afraid it was a trap. He smelled the air at intervals, but wouldn't move. The second day, he moved around the cage cautiously, stopping to check everything that smelled of Brown and jumping at unexpected sounds. He ate a little at the food dish. Then he discovered Brown behind the barricade and ran back to his corner. The third day, he went back to the barricade and gnawed at it at length. (I could never figure out if he was trying to liberate Brown or convince himself that he was safe from him.) God spent the rest of the night trying to mount The Lady. He had never had sex before so he was quite a comical lover. On the fourth day, God was noticeably more relaxed. His new self-confidence showed in the way he let his balls hang out under his tail. The social standing of a male mouse can be gauged by how prominently he displays his testicles: a dominant male wears them proudly, extended, one who is dominated wears his close in against his belly. God groomed himself leisurely while sitting at the "control point" in the center of the tunnel system – which had previously been reserved for Brown – and gained weight quickly as he was free to eat for the first time in over a month.

After four days, I thought their former pattern of supremacy and submission had been broken and they could begin anew as equals. But as soon as I removed the barricade and let Brown re-enter the main chamber, they began to fight. They were a surprisingly even match and they fought until both were exhausted. After a pause, the fight resumed and God was clearly in charge. He went for the base of Brown's spine, sometimes biting his tail, and they fought until exhausted again. At the end of this round, Brown was either paralyzed or in such pain that he could not move his hind legs. God went back to his corner and the fighting ended. There was hardly any blood on either of them. Brown managed to pull himself back into the tunnel he had been sequestered in earlier and I replaced the barricade to protect him from further attacks.

Brown's rear legs were paralyzed, his penis had been bitten off, and one eye had been punctured. Two days after the fight, I saw him struggling to pull himself up to the edge of the water can. The fur on his belly, which had always been brown, was turning dull grey. He fell over on his side and could not get up. As I watched, he went into convulsions, gasped silently, relaxed, and died. I buried him outside.

It was peaceful in the cage until two weeks after Brown's death when The Lady gave birth to six rosy, hairless babies. God had never seen babies and had no idea what they were or what to do about them. He went into a state of panic, hopping around the cage, bumping into walls, and twitching like a squirrel. I later saw him cowering at the end of a dead-end tunnel that was only used for urination. No mouse willingly stays in the shit hole for very long, but God stayed there for three days. Eventually, I coaxed him out with food and he went back to The Lady and her brood.

Soon after The Lady's first litter was born, I was given a year-old albino female who had not had any contact with other mice since earliest childhood. Bess's whole world consisted of herself, her food, and her shoebox full of nesting material which she sorted through and re-arranged everyday. She was fat and splendidly spoiled by solitude.

[more ➔]

Robert Horvitz, 29, is an artist (inside front cover), art teacher, and art critic with a passion for mice. He wrote us, "They are, for one, the essence of mammalhood, the most concise statement of a personality-type that can be seen running through our whole portion of the animal kingdom. Their behavioral repertoire is so limited that, paradoxically, they live on a mythic level: fratricide, rape, invasion, exploration are the daily stuff of life, and once one gets used to the Lilliputian scale, their epics are absolutely captivating. For several years instead of watching television, we'd sit around watching the mice until early morning, following sub-plots and developing emotional attachments."

The article was first printed as "A Short History of Mice" in the New York literary magazine **Big Deal** *No. 3, edited by Barbara Baracks ($3/issue, Box 830, Peter Stuyvesant Station, New York, NY 10009).*

–SB

God was as bewildered by her arrival in the cage as Bess was to find herself there. The Lady left her brood to come down to the main chamber to meet her. After a few minutes of cautious smelling and mutual uncertainty, Bess had had enough of this new weirdness. She attacked The Lady. She was twice the size of The Lady, but very flabby and unskilled at fighting. The Lady fought back and chased her into a hole.

The fighting between the two females continued sporadically for weeks, but Bess had time between fights to learn her way around the main chamber. As she had no experience with complicated spaces and was too heavy to climb around the wire mesh walls, she was unable to find the entrances to the tunnels where God and The Lady lived. After learning where the food was and when it was safe to roam around, she began to construct an elaborate nest along the lines of her former one.

God began spending most of his time with Bess. His own nest was overrun with infants who kicked and squealed all day, competing for the best suckling positions, and when The Lady occasionally went downstairs to eat, he was besieged by pups who refused to believe he had no teats. So he moved out. The Lady was hurt and jealous: when God returned to visit her with Bess's smell on his fur, she would squeak bitterly and push him away.

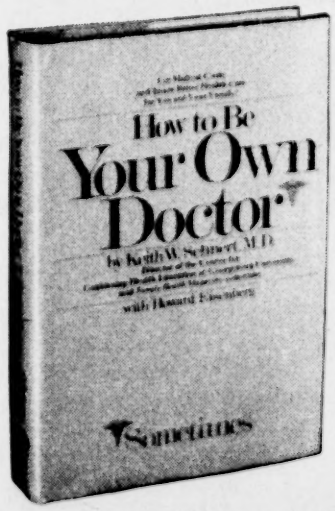
Bess was only too happy to have God stay with her. He had earned her endless gratitude by introducing her to sex. Living alone she had never suspected that anything like sex existed. She had missed out on the rapes and adolescent gang-bangs that soured most females on sex, and, of all the mice I came to know, Bess was the only one who relished it. The others merely tolerated it. God and Bess had intercourse several times a night and even that was not enough to satisfy her.

It took Bess a month to find the tunnel that went to the shit hole, as it was almost a foot above the floor of the main chamber. A week later she found the tunnel that went to The Lady's nest. As she entered the nest tunnel, The Lady caught her scent. They confronted each other near the entrance. Bess had the extreme stupidity to attack. I tried to separate them with a screwdriver but was unsuccessful. Bess could not find her way out to safety and was thus trapped deep within the territory of her rival. By the time I managed to prod her along the pathway back to the main chamber, she was covered with blood and shaking with fear and anger. This same scene occurred a few days later and, to my knowledge, that was the last time The Lady and Bess fought. Thereafter, they left each other alone. Bess got pregnant and, shortly after God was killed by one of The Lady's sons (whose father had been Brown), she gave birth to seven babies of her own and discovered the joys of motherhood. ■

How to Be Your Own Doctor - Sometimes

How to use a stethoscope, measure blood pressure, look at an ear drum, take a pulse. Not just another handy-dandy guide to common medical problems — though it contains an excellent one as an appendix — this book teaches basic medicine in language folks outside the medical profession can understand. Dr. Sehnert is the pioneer in teaching medical self-care. He calls medically-trained laymen Activated Patients. In China they call them barefoot doctors.

—Tom Ferguson



How to Be Your Own Doctor - Sometimes
Keith W. Sehnert, M.D.
1975; 353pp.
$9.95 postpaid
from:
Grosset & Dunlap, Inc.
51 Madison Ave.
New York, NY 10010
or Whole Earth

Take the sphygmomanometer, an instrument that no home should be without. When I gave them to patients in my mostly black class at Northeast-Georgetown Medical Center in Washington, I knew they'd turn up plenty of hypertension, because it runs rampant in the black community. So that was my homework assignment: "Take these blood pressure cuffs home. Try them out on family members, friends, acquaintances — each of you check a minimum of half a dozen people." Nationally, statistics on high blood pressure are 6% for whites and four times that high for blacks, buffeted as they are by inner city stresses and tensions. My students exceeded national figures. A startling 30% of those they examined had this aptly named "silent disease" hypertension — and most didn't even know it.

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A family black bag that will last a lifetime can be put together for $40 to $75 — and that price includes a good thermometer, a high-intensity "throwaway" penlight, tongue depressor blades (an ordinary teaspoon handle will do), and an inexpensive airline or gym bag as well.

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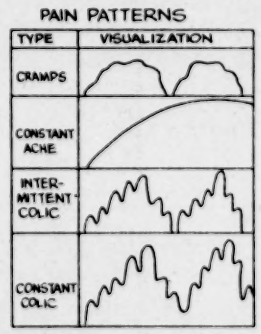
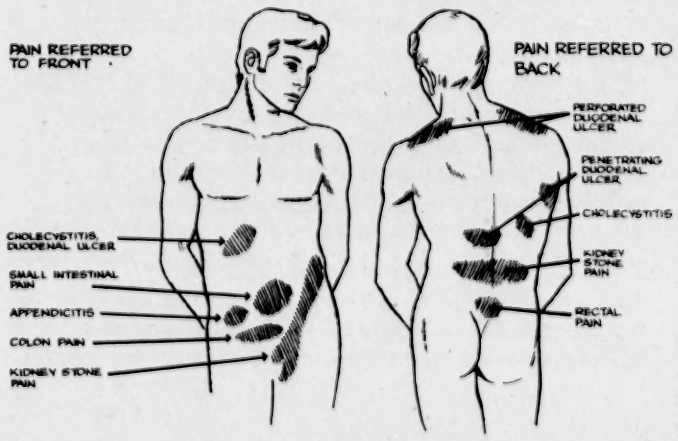
A stethoscope costs $5.00 and up. You can buy them at surgical and hospital supply stores and stores such as Sears and Wards. It is best to buy the flat-surfaced diaphragm model rather than the bell-shaped type.

The blood pressure cuff (sphygmomanometer) costs $25 and up. It is usually available at the same stores that offer stethoscopes. There are two basic types, the mercury column and the aneroid model. The aneroid is several dollars cheaper than the mercury column.

The symptom called pain is usually protective and alerts you to disease. In some cases it may also signal the expelling of unwanted substances such as kidney or gallstones.

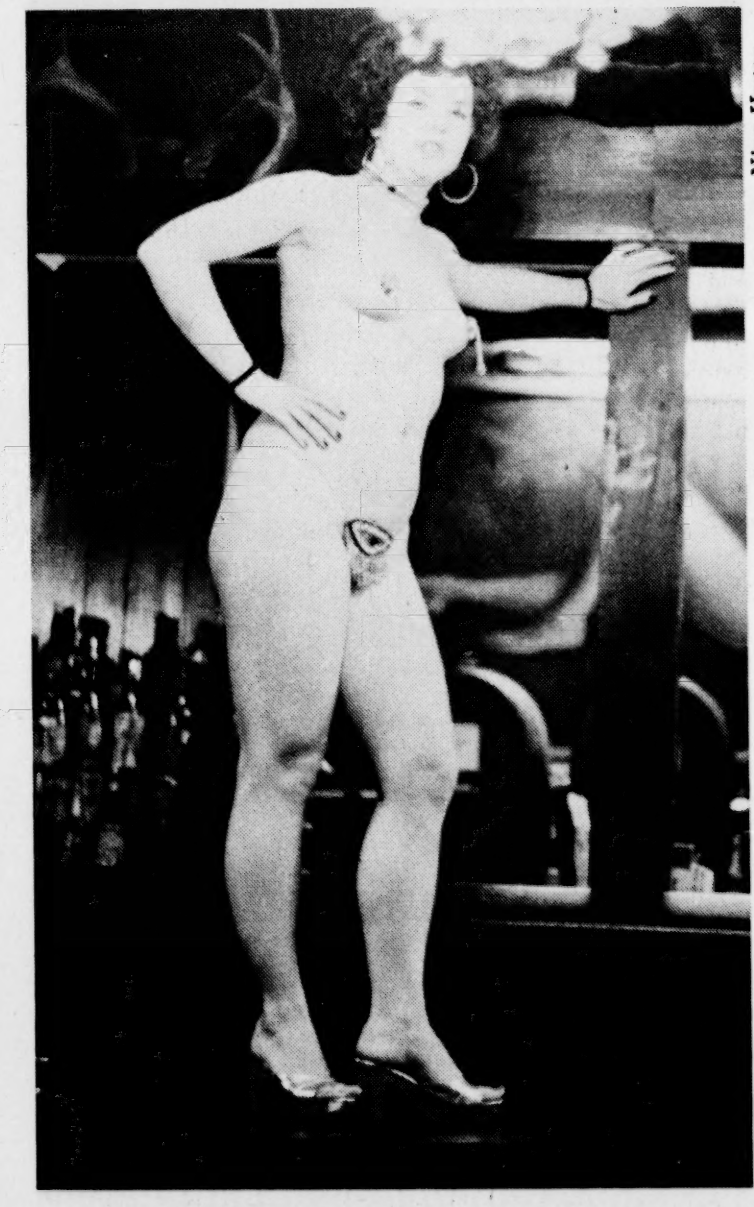
Treatment is based on unravelling the cause of the pain through diagnosis and then applying indicated therapy.





GET DOWN TONIGHT

BY DEBORAH HAYNES



Nina Hagen

"I have never considered myself beautiful . . . Night after night I received compliments too numerous to mention, and I was affected by them." The author at a bar called The Hansom House.

Deborah Haynes is part of the spiritual-intellectual community of Lindisfarne on Long Island (it's shortly moving to Manhattan). It looks to me as if go-go dancing is pretty close to teaching basic infantry training – they're both a form of doing time. New Alchemist John Todd first alerted us to the article. Nina Hagen, the photographer, also is doing the photos to appear with a forthcoming Lindisfarne book of their conferences, which we have been excerpting in The CQ *– Schumaker, Brother David, Schweickart, etc. Maybe this piece should be in the book.*

–SB

"Get Down Tonight" blared from the jukebox as I moved on the stage wearing a g-string, a choker necklace and two black velvet wrist bands. This was my last night, and my relief mingled with abstract meanderings: ideas about power, about the persona of the seductress, seduction and anonymity, sisterhood. I had ventured from the relatively known worlds of the university and a spiritual and educational community into the world of go-go dancing, the world of the vamp, the seductress, and perhaps in a perverted way, of the goddess.

My urge to dance in a bar dated from the time, several years ago, when a friend asked if I could picture myself as a vamp. I answered vehemently, "No, never." But behind my "no" grew the seed of a conviction that I wanted to find that aspect of myself. I had gladly embraced my wise old woman, my boyish little girl, my inner mother; but I didn't know if a seductress also lived within me.

I took a suitcase into New York City one autumn Monday, and that afternoon I walked into a booking agent's office, saying, "I'm a dancer and I'm looking for work." It seemed a rather audacious statement, but I had studied dance and loved it. Ten minutes later I was undressed and mystified about how to get into the costume he had given me. Feeling frightened, nervous and apprehensive, yet brazen, I asked the agent to help me put it on. My ignorance did not seem to faze him, and a few minutes later I was given my "audition," a 30-second examination of my body in motion. I evidently passed because he told me to dress behind the screen and then we would talk. I felt elated, initiated into this dark world. I had never seen a go-go dancer, but I was about to become one!

At that time the office, an 8' X 12' room, held two male agents, two other dancers there to be booked for the coming week, and me. Soon I too was having my turn beside the fellow who actually did the booking arrangements. As I was given jobs for the coming week, I heard the colorful names of bars – Adam and Eve, Jax 3 Ring Circus, Tulip Club, Wedge Inn, Melody Bar, Tenda Trap – and learned that I would earn $7 - $10/hour plus tips for being in a bar 5 - 6 hours, yet actually dancing only 2 or 3. The next step was acquiring costumes. Wanting their "girls" (for dancers are never called women) to look good, to present a well-dressed/undressed image, the agents sold their own costumes. Made of satin and ornamented with intricate beadwork, they were beautiful. Twenty-eight dollars did not seem exorbitant, considering that I would then be one of the best dressed girls in the business.

Because the costumes were scanty, what I really confronted was my feeling about my body. I have

Nina Hagen

"The second day I had a lesson from a bar customer. After watching me dance for a while, he said that I should dance more seductively, using my eyes particularly. This meant that instead of avoiding their glances, I should actively seek each man's attention, making each one feel that I was dancing only to him."

never considered myself beautiful. A rounded belly, fleshy midriff, muscular legs and smallish breasts were ample reason to not accept my body. Night after night I received compliments too numerous to deny, and I was affected by them. I had known in the past that my self-acceptance was to some extent dependent upon the love of a man. I have not outgrown this feeling, nor do I know if I ever will, but in some way my experience on the stage further freed me.

My first night of dancing was in a "nice" bar. I arrived there having absolutely no idea of what to expect, but knowing that I must not display my ignorance. I had been warned that new dancers invariably got harassed if they let their newness be known. This was my first attempt to put on the seductress mask, and I was not successful. A measure of my failure was a man's remark that I looked like a schoolmarm. I could barely restrain my laughter. I had been a teacher, and I responded to his vulgar statement with a schoolmarmish look of admonishment. Clearly, this was the wrong persona for the situation. That first night I was afraid of the advances of men, not knowing how to handle them. Yet I was beginning to recognize even then that I wielded tremendous power, and I felt it linked to the eternal feminine.

The second day at a different bar, I had a lesson from a bar customer on how to be a better dancer. (I danced in a different one almost every night, travelling from the Bronx to Brooklyn to Elizabeth and Newark, New Jersey to Poughkeepsie, New York.) After watching me dance for a while. he said that I should dance more seductively, using my eyes particularly. This meant that instead of avoiding their glances, I should actively seek each man's attention, making each one feel that I was dancing only to him. He gave me a further lesson in bar culture when he told me that men hate women for two reasons. First, men are objectified as sex objects (and what a reversal *that* is!); second, women frustrate men, sexually and emotionally. I thought this an interesting contradiction. It seemed that the very action he encouraged was what caused men, or perhaps him, to hate women. During the following weeks, his advice proved to be important. Though I was originally very reluctant, I evolved a much more seductive dancing style.

I had one powerful experience of sisterhood, not with another dancer as I might have expected, but with a woman who appeared one night at the bar with her boyfriend. As I danced around the circular stage I returned again and again to look at her. She sat, head bowed, gazing at my feet when I looked at her. She seemed shy and uncertain, yet I sensed repulsion in her shyness. During one of my breaks, I walked to her and said, "I'm not your enemy. I think I know how you feel." She appeared shocked, rather taken aback, and I withdrew to continue mingling with the customers. After my next set, a 20 minute period of dancing followed by 20 minutes rest, she approached me, and we had an exciting and engaging conversation about ourselves, sharing our feelings about our bodies and this kind of dancing. I gave openly and easily to her and was reminded that sisterhood *is* compelling. This contrasted sharply with my guardedness and various personae with men.

POWER. I felt a growing sense of my power over the clientele. Seduction and enticement, particularly when desires will not be fulfilled, is an act of the dancer's power over the viewer. I grew more aware of the personal power and authority I claimed by saying no. This is not a submissive reaction, but one of assertion. NO. No, I will not go out with you. No, I am not a hooker. No, I do not want to pursue anything with you. One evening a man asked me if I was a goddess, a question to which I answered, "Yes." Perhaps I was a dark goddess, a Lilith, or a manifestation of Kali, but I felt at moments quite holy, and that my dancing had a holy quality. I wanted to say a marvelous YES to living, loving my body and loving them loving me. Then I wanted to shout, I'M HERE AND ALIVE AND LOVING IT.

But I received a glimmer of another level of power the night my agent walked into the bar while I was on stage. Aware that he was judging my performance, I became very nervous and I felt guilty for not wearing stockings as the law, very leniently enforced, required. Preparing to be reprimanded, I constructed my excuse as I danced, and when he came over after the set and said, "Come and see me tomorrow," I quivered in my uncomfortable platform shoes. I had one kind of power over the men who watched me dance, but he wielded another kind over me. (The next day he gave me favorable feedback and a high-paying job in one bar for the next week.)

A gradual change in my enjoyment of the dancing paralleled the changes in the types of bars I was sent to. In the "nice" bars, such as the one to which I was sent on my first night, the dancer was strictly separated from the customers, either because of a protective bartender or because of the stage location. In the next class of bars the dancer was encouraged to dance on the bar top or as close as possible to the customers, but there was an implicit "no touch" policy. Though the dancer might be only a few inches from a man's face, he was not allowed to touch her. In yet a third class of bars the only limitations were those set by the dancer's tolerance, for the owners only wanted more customers buying more drinks. The customers gave tips (an important part of every dancer's pay) only to a dancer who would "flash" – quickly expose her breasts or, if topless, her pubic hair and/or genitals – or who would allow herself to be touched. As I was sent to the second class of bars, I began to feel that the dancing was a form of degradation of my body and of the men for whom I danced. Once I was booked at a bar of the third type, and I was completely repelled. After that experience, even dancing at congenial neighborhood taverns was no longer the same.

While I was dancing many friends wanted to come and watch me. I invariably said no, at first a more intuitive than rational response. I began to feel a connection between anonymity and my willingness to be seductive. Only twice was I authentic with my feelings. Once I told a man how I really felt about dancing, how psychologically and physically exhausting it could be. Another time I told a customer my interests and background. As a result of having exposed my "real" self, I became vulnerable. Once I allowed myself to see them as unique human persons with needs and desires, I could no longer dance in an uninhibited way. The emotional energy required to remain detached was immense, but the vulnerability that accompanied emotional openness was even more painful. One man came every night for a week to watch me dance. One night he brought me one red rose, saying that my dancing and smiles had "made his week." His obvious longing for intimacy and closeness was genuine and it touched me.

But all men were not so devoted and polite. Tavern owners and customers tried to claim me in various ways. Propositions were easy to ignore. I had offers of quickies for $20, of a trick for $200, fun from a handsome Frenchman. But occasional lewd and degrading allusions to anatomy or sexual activity were much more difficult to accept with detachment. My daily struggle to maintain my sovereignty as a person and as a woman was exhausting. Hence, I am not surprised that many dancers hate men. In bars, both the dancers and the men are sex objects, and the entire situation is charged with frustration and unsatisfied need. Go-go dancing provides women who already hate men, for whatever reason, an opportunity for reprisal. And even if a woman feels positive at the outset, the experience of being often jeered, ridiculed, propositioned and grabbed is enough to generate man-hating.

Nina Hagen

"Once I allowed myself to see the customers as unique human persons with needs and desires, I could no longer dance in an uninhibited way." Deborah Haynes at Lindisfarne.

Days passed and toward the end of my week-long booking in Springfield, Massachusetts, where I'd been given accommodation at a Howard Johnson's Motor Lodge, I was asking how much longer I could do this work. My answer came unexpectedly in 3 dreams of hysteria and violence. I listened to the message of these dreams and of my daily inner dialogues, and knew that I must not continue. I called my agent that night to tell him, and was surprised at the ease with which he said, "Take a rest."

As the music droned on during that last night, I ceased caring about receiving tips and dancing to the customers, and concentrated on keeping a pace just short of exhaustion. When I finally climbed down from the stage, I thought I might never dance again.

October 1975

* * *

Six months have passed since my excursion into this dramatically physical and sexual world. My mood of reflection has changed into one of profound ambivalence. I hover at the edge of a decision to dance again, yet feel the potential danger, the risk of being caught in the play, unable to disentangle myself without great emotional or psychological distress. This situation epitomizes much that is evil within our culture; and though I believe we must confront and experience our capacity to participate in evil, that must be done from a position of inner strength. For this is the world of "All Goin Down Together." ■

SEX NOTES *by Kay Weiss*

The Birth Control Pill and the Sex-Ratio

The pill is changing the sex-ratio of the U.S. population. Normally 52% of newborn babies are male and 48% are female. However, demographers are finding that women who conceive soon after going off the pill are more likely to conceive female babies. The sex of a child at conception is determined both by the male's sperm and the Ph balance of the vagina. The pill makes the vaginal environment more acidic and therefore more hostile to male chromosome-carrying sperm, resulting in more female conceptions. This effect may be lessened by douching with alkaline solutions such as baking soda, or waiting for a few months after coming off the pill before conceiving.

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Men Can Nurse Babies, Too

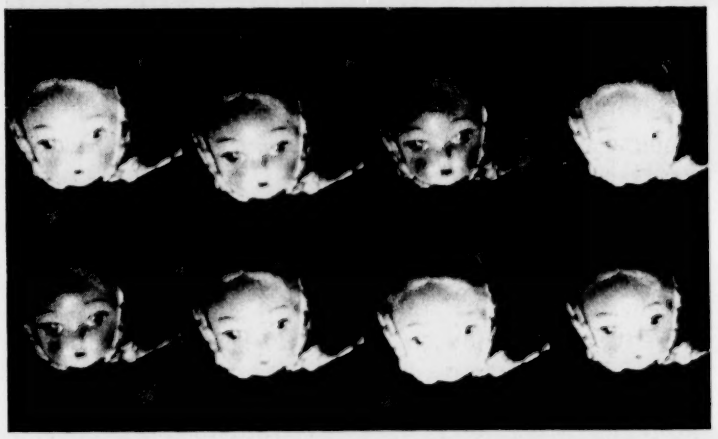
Some anthropologists who are studying whether there is a biological basis for having a division of labor by sex think that nursing a baby could be men's work, too. Numerous reports of how men nursed infants in cases of necessity have accumulated in the anthropological and medical literature over the past 100 years.

Increased breast size is not necessary for milk production, although it is usually a result. Chimpanzees, for instance, are very efficient baby nursers, and they have completely flat breasts, as do many women. What is necessary for milk production is hormonal stimulation, and it doesn't have to be achieved through taking hormone drugs. The mother who has just given birth has internal hormone stimulation, but so can any individual, man or woman, who puts an infant to the breasts for a period of time and lets it suck. The sucking stimulus signals the hypothalamus to signal the pituitary gland to signal the gonads to secrete prolactin. After that, estrogen flow increases and milk comes in. The amount of time that sucking must continue before lactation begins ranges from days to weeks for different people.

The La Leche League, an organization devoted to education about breastfeeding, has familiarized the public with the idea that non-mothers can nurse by pointing out that women who adopt babies can nurse them by this process, even though they may never have been pregnant. But the ability of men to nurse is a long-forgotten and denied human species survival mechanism enabling infants to be nourished in cases of necessity. That is, it is denied among western 'civilized' societies. In modern day pretechnological groups, men are often seen to put babies to the breast from time to time to passify them.

Kay Weiss was brought to the Bay Area by the Feminist Women's Health Center in Oakland to be head of Medical Advocates for Information. She used to work with Ralph Nader's network (on DES).

—SB



Some males in our society experience breast swelling and even a small amount of milk secretion at puberty even without a sucking stimulus, but this phenomenon will disappear in most men if it is not developed. Dr. Rulon Rawson, an endocrinologist at the University of Texas, claims that as many as 40% of U.S. boys at puberty have some temporary breast swelling. This results from hormonal fluctuations which occur while the male and female sex hormones in the body are 'fighting it out' for dominance.

[For normal functioning each sex depends on the interaction of both male and female sex hormones (androgens and estrogens) and every individual possesses both in varying amounts. But just as the masculine or feminine potential in any individual can be stimulated by an injection of the opposite sex hormone, it can also be psychologically stimulated. As cultural environment influences the brain, the brain can in turn change the production of hormones through its control of the pituitary gland, a master endocrine gland which regulates other hormone-producing organs. Thus, hormone production can results, not only from *physiological* stimulation, as with the sucking stimulus, but from psychological stimulation. Cultures which encourage males to play exclusively masculine roles and females exclusively maternal roles may be decreasing the male's production of female sex hormones, and vice versa. The gender roles that our culture assigns us have as much effect on our biology as biology has on determining our gender roles.]

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DES: Banned for Cattle, Prescribed for Women

Presently we are witnessing two unique occurrences in the recorded history of our species: the first demonstration that cancer can be induced in the fetus with drugs taken by the mother, resulting in the first drug-induced cancer epidemic in young women.

Since 1945, six million pregnant women in the U.S. were presecribed Diethylstilbestrol (DES) or other synthetic estrogens experimentally to prevent miscarriage, in the absence of proof of the drug's safety or efficacy. Even after it was proven 'totally useless' in prevention of miscarriage in 1952, physicians continued to prescribe it for two decades. And today, in spite of the 1971 U.S. Food and Drug Administration ban on the writing of prescriptions

for DES in pregnancy, physicians continue to write 11,000 prescriptions every year for DES for pregnant women for 'prenatal care'.

Vaginal cancer, a new disease never before known in the world medical literature, is appearing in the daughters of some of those pregnancies, and there have been some reports of sterility in a few of the sons. About 250 'DES Daughters' have developed vaginal cancer when they reached puberty so far, and another million are expected to develop vaginal adenosis (abnormal cells) which may or may not become precancerous.

This year the Food and Drug Administration is banning the addition of DES as a fattener to cattle feed because small residues of DES remain in beef liver marketed for human consumption. For 12 years, scientists had lobbied the FDA to obtain a ban on DES in cattle feed because of laboratory animal evidence that DES was cancer-causing in the diet. But not until the first cases of vaginal cancer did they have the necessary clinical evidence that DES could cause cancer in humans. Consequently, in 1971, the FDA began the process of banning DES in cattle feed even though residues of only 0.3 microgram were remaining in marketed beef. And although cancer in women provided the necessary evidence against DES, the FDA approved for manufacture a new 250 milligram dosage of DES for use as a 'morning-after pill' contraceptive. It contains 833,000 times the amount of DES that was banned for human consumption in food.

Many of the young women who take the 'morning-after pill' are 'DES Daughters' in whom it could exacerbate the growth of adenosis or of latent, undetected cancer. Moreover, about 90% of women who take the morning-after pill have no need of it: the chances of pregnancy after one unprotected intercourse, even if it took place at ovulation, are about 10%.

To date no public health agency has taken the responsibility of recalling and testing the 3 million 'DES Daughters' or the 3 million 'DES Sons.' Most of these individuals must learn of their exposure from the media, attempt to obtain information from their mother's obstetrician as to whether she was prescribed DES, which often requires legal aid, and locate a physician who is aware of the epidemi and knowledgeable of the special tests that can detect vaginal cancer or sterility. The incidence of sterility in 'DES Sons' is thought to be very low, whereas the incidence of vaginal cancer, often a fatal disease, is expected to be one in 7,000 exposed.

•

Grass and Impotency

Marijuana and estrogen, the female sex hormone, have a similar chemical composition and a similar effect on men. Recently there have been reports of breast growth, lowered testosterone (male sex hormone) level, and lowered sperm count in some heavy dope smokers.

Does this mean that THC will be the new male contraceptive pill? ■

Further follow-up on the jellyless diaphragm

Since the article in last issue, we have again received a lot of response to the idea of using the Koroflex hinge diaphragm jellyless. Letters arrived from enthusiastic women who said they had been using the method successfully for years. Muriel Zimmerman's letter below is an example.

But we have also received reports of two pregnancies based on the jellyless Koroflex, from the Marin County Family Planning Clinic here in California. Unfortunately, the names of the women could not be disclosed so I was not able to get further information, or even find out if they were trying the method because of the article or had been using the method for some time.

I'll say it again: this is risky. It seems to work for some fertile women and not for others. It would take a major study to find out why. Don't try it if a pregnancy or abortion would mess up your life.

—Rosemary Menninger

Dear Rosemary Menninger,

I have just read your item about jelly-less diaphragm and wanted to tell you my experience, not with a Koroflex, but with an old-style Koromex.

In about 1960 I got my first diaphragm and was revolted by the jelly, naturally, so I was very glad to get to a doctor who recommended using a well-fitted diaphragm alone, no jelly, for two reasons: (1) it was a whole lot nicer, so you were a lot more likely to use it; (2) it avoided the possibility that a spermicide rotted your cervix, eventually. I had my diaphragm checked for fit every six months, so long as I needed it, had two pregnancies, planned, and easily achieved (which I mention because I am very fertile and probably would have had a baby a year if the diaphragm-without-jelly had not worked), and only gave up the method because my husband had a vasectomy in 1973. I have always had bad feelings about telling anybody about this, because people get very upset and say that it doesn't work, but for me it did, and apparently it did for the many patients of Dr. Ralph Zaroff in Philadelphia, PA (you might want to write to him? is he even still alive? don't know).

Yours sincerely,

Muriel Zimmerman
Santa Barbara, California

Childbirth Preparedness Kit

Seems a sensible item. The supplier has a small catalog which also offers nursing bras, washable, re-usable bra pads, hard-to-find pure hydrous lanolin, and other infant goodies.

—SB

Childbirth Preparedness Kit
$20.95 postpaid

from:
Happy Family Products
1252 S. La Cienega Blvd.
Los Angeles, CA 90035

KIT CONTAINS:

1 pair disposable sterile gloves
1 disposable sheet — 40" x 72"
2 Prep pad alcohol — to wipe and clean the birth opening before delivery.
2 towelettes
2 cord clamps — to clamp umbilical cord before cutting
1 disposable scalpel — to cut the umbilical cord
6 oversponges 4" x 4" — to wipe the mucus from the baby's mouth
1 bulb aspirator — to remove fluid from the baby's mouth and throat
1 receiving blanket
1 obstetrical pad — to be used after delivery
1 plastic bag — to carry the placenta to the hospital for inspection
6 disposable towels — 13" x 18"
2 Nylon tie offs — for use in cases of enlarged umbilical cord

The Space Crone

BY URSULA LE GUIN

The menopause is probably the least glamorous topic imaginable; and this is interesting, because it is one of the very few topics to which cling some shreds and remnants of taboo. A serious mention of menopause is usually met with uneasy silence; a sneering reference to it is usually met with relieved sniggers. Both the silence and the sniggering are pretty sure indications of taboo.

Most people would consider the old phrase "change of life" a euphemism for the medical term "menopause," but I, who am now going through the change, begin to wonder if it isn't the other way round. "Change of life" is too blunt a phrase, too factual. "Menopause," with its chime-suggestion of a mere pause after which things go on as before, is reassuringly trivial.

But the change is not trivial, and I begin to wonder how many women are brave enough to carry it out whole-heartedly. They give up their reproductive capacity with more or less of a struggle, and when it's gone they think that's all there is to it. Well, at least I don't get the Curse any more, they say, and

Ursula Le Guin

Ursula Le Guin I regard as the highest quality writer working with science fiction since Kurt Vonnegut moved on. Her books include **The Dispossessed** *(rave reviewed in the Winter '75* **CQ***);* **The Lathe of Heaven***;* **The Left Hand of Darkness***;* **Wizard of Earthsea***;* **The Farthest Shore***; and* **The Wind's Twelve Quarters** *(short stories, including a "prequel" to* **The Dispossessed***).*

When I told Margaret Mead that we were printing a piece by Ms. Le Guin which says that women start getting really good after menopause, Margaret snapped cordially, "She's talking about her mother."

Now, Ursula Le Guin's mother is Theodora Kroeber-Quinn, author of **Ishi in Two Worlds***, wife of the eminent anthropologist Alfred Kroeber (and his biographer —* **Alfred Kroeber: A Personal Configuration***), and, at 79, a stunning, gracious woman.*

Hence the piece is illustrated with photographs of mother and daughter by John Quinn, Theodora's husband of eight years, and Lisa Kroeber, her daughter-in-law. I am grateful to Ms. Le Guin's enthusiastic agent, Virginia Kidd, and the University of California Press for help in assembling this article. (U.C. Press, by the way, has a new edition of **Ishi** *forthcoming, with more photos.)*

—SB

Theodora Kroeber

the only reason I felt so depressed sometimes was hormones. Now I'm myself again. But this is to evade the real challenge, and to lose, not only the capacity to ovulate, but the opportunity to become a Crone.

In the old days women who survived long enough to attain the menopause more often accepted the challenge. They had, after all, had practice. They had already changed their life radically once before, when they ceased to be virgins and became mature women/wives/matrons/mothers/mistresses/whores/ etc. This change involved not only the physiological alterations of puberty – the shift from barren childhood to fruitful maturity – but a socially recognized alteration of being: a change of condition from the sacred to the profane.

With the secularisation of virginity now complete, so that the once awesome term "virgin" is now a sneer or at best a slightly dated word for a person who hasn't copulated yet, the opportunity of gaining or regaining the dangerous/sacred condition-of-being at the Second Change has ceased to be apparent.

Virginity is now a mere preamble or waiting-room to be got out of as soon as possible; it is without significance. Old age is similarly a waiting-room, where you go after life's over and wait for cancer or a stroke. The years before and after the menstrual years are vestigial: the only meaningful condition left to women is that of fruitfulness. Curiously, this restriction of significance coincided with the development of chemicals and instruments which make fertility itself a meaningless or at least secondary characteristic of female maturity. The significance of maturity now is not the capacity to conceive but the mere ability to have sex. As this ability is shared by pubescents and by postclimacterics, the blurring of distinctions and elimination of opportunities is almost complete. There are no rites of passage, because there is no significant change. The Triple Goddess has only one face: Marilyn Monroe's, maybe. The entire life of a woman from 10 or 12 through 70 or 80 has become secular, uniform, changeless. As there is no longer any virtue in virginity, so there is no longer any meaning in menopause. It requires fanatical determination now to become a Crone.

Women have thus, by imitating the life-condition of men, surrendered a very strong position of their own. Men are afraid of virgins, but they have a cure for their own fear and the virgin's virginity: fucking. Men are afraid of crones, so afraid of them that their cure for virginity fails them; they know it won't work. Faced with the fulfilled Crone, all but the bravest men wilt and retreat, crestfallen and cockadroop.

Menopause Manor is not merely a defensive stronghold, however. It is a house or household, fully furnished with the necessities of life. In abandoning it, women have narrowed their domain and impoverished their

souls. There are things the Old Woman can do, say, and think which the Woman cannot do, say, or think. The Woman has to give up more than her menstrual periods before she can do, say, or think them. She has got to change her life.

The nature of that change is now clearer than it used to be. Old age is not virginity, but a third and new condition; the virgin must be celibate, but the crone need not. There was a confusion there, which the separation of female sexuality from reproductive capacity, via modern contraceptives, has cleared up. Loss of fertility does not mean loss of desire and fulfillment. But it does entail a change, a change involving matters even more important – if I may venture a heresy – than sex.

The woman who is willing to make that change must become pregnant with herself, at last. She must bear herself, her third self, her old age, with travail and alone. Not many will help her with that birth. Certainly no male obstetrician will time her contractions, inject her with sedatives, stand ready with forceps, and neatly stitch up the torn membranes. It's hard even to find an old-fashioned midwife, these days. That pregnancy is long, that labor is hard. Only one is harder, and that's the final one, the one which men also must suffer and perform.

It may well be easier to die if you have already given birth to others or yourself, at least once before. This would be an argument for going through all the discomfort and embarrassment of becoming a Crone. Anyhow it seems a pity to have a built-in rite of passage and to dodge it, evade it, and pretend nothing has changed. That is to dodge and evade one's womanhood, to pretend one's like a man. Men, once initiated, never get the second chance. They never change again. That's their loss, not ours. Why borrow poverty?

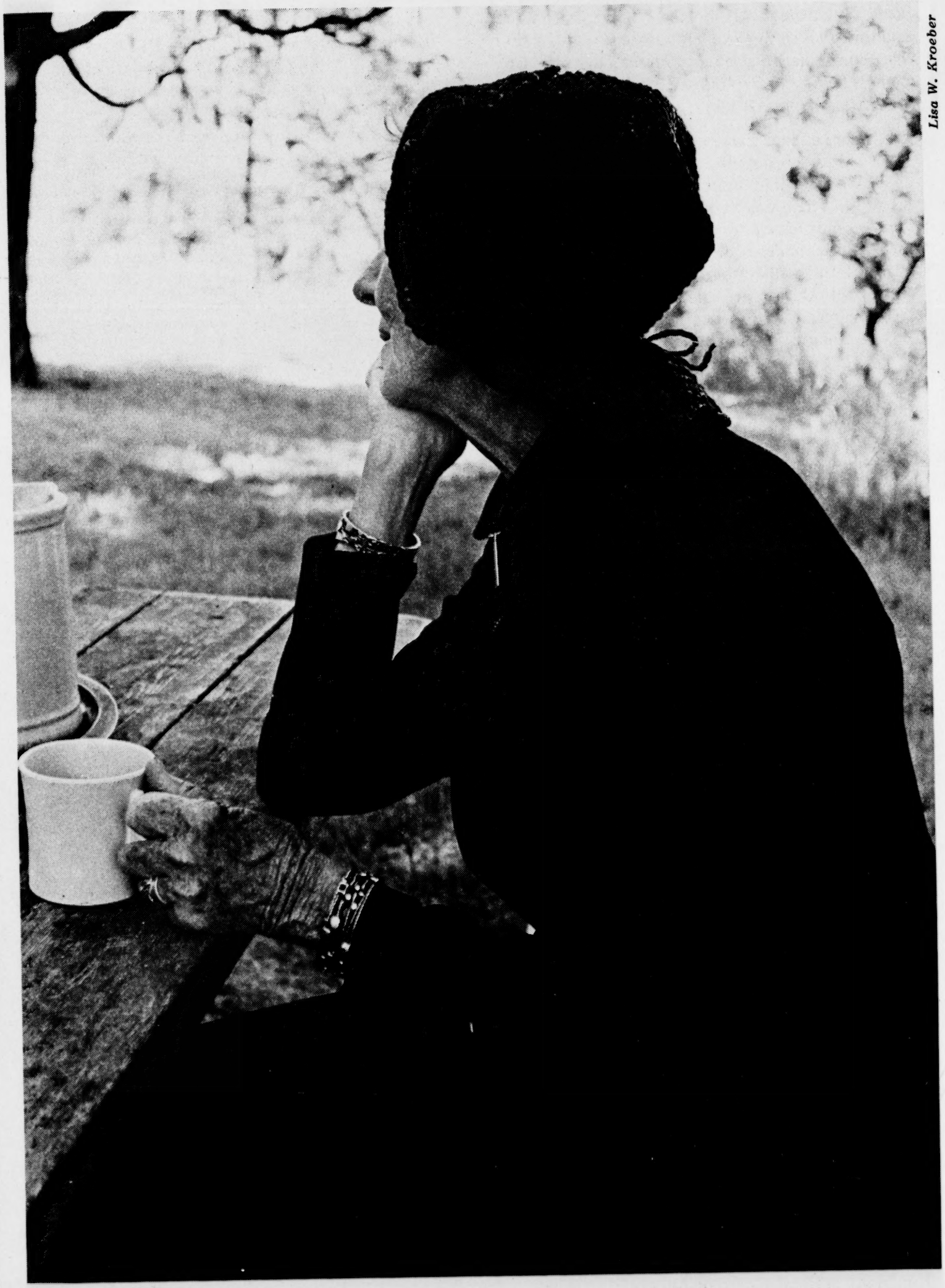
Certainly the effort to remain unchanged, young, when the body gives so impressive a signal of change as the menopause, is gallant; but it is a stupid, self-sacrificial gallantry, better befitting a boy of twenty than a woman of forty-five or fifty. Let the athletes die young and laurel-crowned. Let the soldiers earn the Purple Hearts. Let women die old, white-crowned, with human hearts.

If a space ship came by from the friendly natives of the fourth planet of Altair, and the polite captain of the space ship said, "We have room for one passenger; will you spare us a single human being, so that we may converse at leisure during the long trip back to Altair, and learn from an exemplary person the nature of the race?" – I suppose what most people would want to do is provide them with a fine, bright, brave young man, highly educated and in peak physical condition. A Russian cosmonaut would be ideal (American astronauts are mostly too old). There would surely be hundreds, thousands of volunteers, just such young men, all worthy. But I would not pick any of them. Nor would I pick any of the young women who would volunteer, some out of magnanimity and intellectual courage, others out of a profound conviction that Altair couldn't possibly be any worse for a woman than Earth is.

What I would do is go down to the local Woolworth's, or the local village marketplace, and pick an old woman, over sixty, from behind the costume jewelry counter or the betel-nut booth. Her hair would not be red or blonde or lustrous dark, her skin would not be dewy fresh, she would not have the secret of eternal youth. She might, however, show you a small snapshot of her grandson, who is working in Nairobi. She is a bit vague about where Nairobi is, but extremely proud of the grandson. She has worked hard at small, unimportant jobs all her life, jobs like cooking, cleaning, bringing up kids, selling little objects of adornment or pleasure to other people. She was a virgin once a long time ago, and then a sexually potent fertile female, and then went through menopause. She has given birth several times and faced death several times – the same times. She is facing the final birth/death a little more nearly and clearly every day now. Sometimes her feet hurt something terrible. She never was educated to anything like her capacity, and that is a shameful waste and a crime against humanity, but so common a crime should not and cannot be hidden from Altair. And anyhow she's not dumb. She has a stock of sense, wit, patience, and experiential shrewdness, which the Altaireans might, or might not, perceive as wisdom. If they are wiser than we, then of course we don't know how they'd perceive it. But if they are wiser than we they may know how to perceive that inmost mind and heart which we, working on mere guess and hope, proclaim to be humane. In any case, since they are curious and kindly, let's give them the best we have to give.

The trouble is, she will be very reluctant to volunteer. "What would an old woman like me do on Altair?" she'll say. "You ought to send one of those scientist men, they can talk to those funny-looking green people. Maybe Dr. Kissinger should go. What about sending the Shaman?" It will be very hard to explain to her that we want her to go because only a person who has experienced, accepted, and acted the entire human condition – the essential quality of which is Change – can fairly represent humanity. "Me?" she'll say, just a trifle slyly. "But I never did anything."

But it won't wash. She knows, though she won't admit it, that Dr. Kissinger has not gone and will never go where she has gone, that the scientists and the shamans have not done what she has done. Into the space ship, Granny. ■



Lisa W. Kroeber

Theodora Kroeber

Box 428, Sausalito, California 94965

KENNETH ROBERTS

My one recognition of the Bicentennial Year will be this one: to express indignation that America's foremost historical novelist, who specialized in the Revolutionary War period, has not been noticed, praised, re-reviewed, or made into excellent movies for the occasion. It's a bad oversight.

I grew up on Kenneth Roberts. His New England morality, epigrammatic style, attention to detail, doubt of conventional interpretation, and impatience with shoddiness still inhabit my life. Age 12-16 I read most of his books three times, **Lydia Bailey** *maybe five. I can read them still. General Benedict Arnold and Major Rogers of Rogers' Rangers remain my heroes.*

Arundel *is the account of Col. Benedict Arnold's secret expedition in 1775 through the wilderness of Maine to attack Quebec.*

Rabble in Arms *covers the two years following, with the same characters. General Arnold delays Burgoyne with a naval battle of smallboats on Lake Champlain and then defeats him at Saratoga in a battle that is more the result of one man's, Arnold's, valor than any similar event in history. (Arnold is still regarded as America's greatest battlefield commander.)*

Oliver Wiswell *is the Loyalist side of the "War of the Rebellion." The Loyalist cause and heroes are all the more compelling since we have forgotten them. They lost. Their battles are otherwise unsung — Howe's capture of New York in 1776, and the bitter campaign in Virginia and the Carolinas in 1780-81, especially the Loyalist victory at the fort of Ninety Six. (I've been there. There's not a marker of any kind.)*

Captain Caution, *again with Arundel characters, at sea on American privateers in the Revolutionary war and imprisoned in the British hulks.*

The Lively Lady *covers the "War of Impressments" (1812). Privateering again, and this time the infamous Dartmoor Prison, a mile in circumference, 6,000 Americans inside.*

Northwest Passage *is considered Roberts' finest book, covering not only the fabled expedition of Roger's Rangers against the Indians at St. Francis in 1799 but also the later career and dissolution of the hero.*

Lydia Bailey *is the most adventurous and astonishing. Haiti when the Blacks under Toussaint L'Ouverture defeated Napoleon. North Africa ("the shores of Tripoli") when America sold out its allies against the Barbary pirates. Roberts worked six years on this one. It's a book you disappear into.*

Kenneth Roberts was no cosmetic historical novelist. He did prodigious research, much of it original, and developed a compelling narrative form. As one reviewer said, "He can spin a yarn so that you despise sleep."

All of these books go in and out of paperback print with Fawcett World. They were quite popular when they came out in the 30's, 40's, and 50's (and have not dated a line) so most libraries will have them in hardcover.

The Revolution has become a simple story. It wasn't.

—SB

•

Arundel

In truth, I think all of us would be better off if we spoke and speculated less concerning the private lives of other folk, since we cannot know the whys and wherefores of their actions, and are prone to impose standards of conduct on them that we are unwilling to impose on ourselves.

Portion of map in **Rabble In Arms**. *All of Roberts' books have maps on the endpapers.*

Lydia Bailey

I'm not over-enthusiastic about books that teach or preach, but I may as well admit in the beginning that my primary reason for writing this book was to teach as many as possible of those who come after me how much hell and ruin are inevitably brought on innocent people and innocent countries by men who make a virtue of consistency.

All the great villains and small villains whom I met so frequently in the events I'm about to set down were consistent men — unimaginative men who consistently believed in war as a means of settling disputes between nations; equally misguided men who consistently believed that war must be avoided at all hazards, no matter what the provocation; narrow men who consistently upheld the beliefs and acts of one political party and saw no good in any other; short-sighted men who consistently refused to see that the welfare of their own nation was dependent upon the welfare of every other nation; ignorant men who consistently thought that the policies of their own government should be supported and followed, whether those policies were right or wrong; dangerous men who consistently thought that all people with black skins are inferior to those with white skins; intolerant men who consistently believed that all people with white skins should be forced to accept all people with black skins as equals. And I know that any nation that cannot or will not avoid the dreadfull pitfalls of consistency will be one with the dead empires whose crumbling monuments studded our battlegrounds in Haiti and in Africa.

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Rabble in Arms

"That's right," Arnold said. "If we can get three hundred good carpenters, and lumber and nails and sails and rope and guns, and enough sailors to man 'em after they're built, we'd have a fleet. Well, that's what we've got to have!" He eyed me sardonically.

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Oliver Wiswell

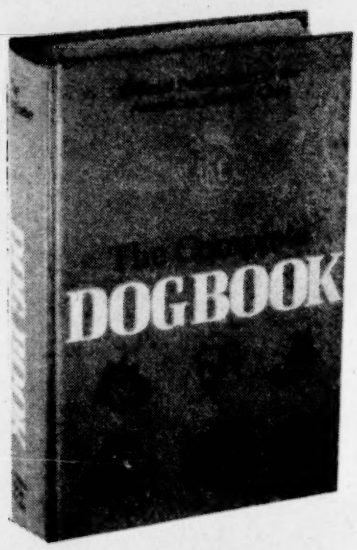
Never before had I seen a man who had been tarred and feathered; but I didn't need to be told that I was looking at one now. There may be sights that make a spectator feel more degraded for belonging to the race that creates them; but if there are, I've never seen any of them.

What the agony of humiliation is to the victim, no other than a victim may compute; yet that man stood there, furiously tense and raging, while those about him howled and struck at him with sticks until little feathers, pink in the glare from the burning barn, whirled upward from his back and went drifting down the wind.

The Complete Dog Book

I hate dogs and like this book. Scanning through the 123 breeds recognized by the American Kennel Club (whose official publication this is) I find myself commencing to shop. Hm, would I like a Siberian Husky (fastidiously clean, amiable), a French Bulldog (intelligent, not noisy), a Mastiff (one brought down an elephant), an Otter Hound (sagacious, devoted, web-footed)? The brief, authoritative introductions to care, training, health, breeding, etc. seem manageable. I even like this kind of book — co-evolved with its users and its dogs through fifteen editions, cheap, restrained and proud.

—SB



The Complete Dog Book
(The photograph, history, and official standard of every breed admitted to AKC registration, and the selection, training, breeding, care and feeding of pure-bred dogs.)
American Kennel Club
1941, 1975; 667pp.
$7.95 postpaid
from:
Howell Book House Inc.
730 Fifth Ave.
New York, NY 10019
or Whole Earth

There are a certain number of basic things a civilized dog should do when you tell him to, to make your life and his easier. They are: walking at your side in the streets, called "heeling" in the jargon of training, sitting, and lying down on command, staying where you tell him to, coming when you call him, and standing and holding his position at your command.

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Schipperke

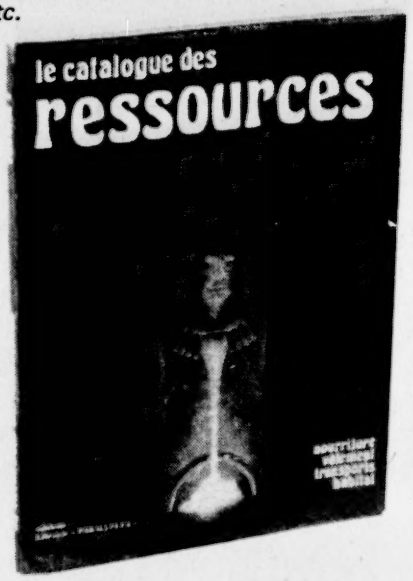
The name is Flemish for "little captain" and is properly pronounced "skeep-er-ker" (the last *r* almost silent). Though called a canalboat dog, the Schipperke was as popular with shoemakers and other workmen as it was on the canals. . . . While usually an excellent ratter, the Schip is not a powerful fighter, though he can hold his own with most dogs of his weight and will tackle anything in defense of his household or of his master. He is not aware of the limitations of his size. . . . This breed is usually long-lived for a small one, many instances of dogs living to be fifteen and sixteen years old being recorded; one dog, bred in Rothesay, Scotland, was reputed to have lived twenty-one years. Schips are very fond of children and in some cases have served as guards; and they have taken the place, to some extent, of human nurses, so devoted are they to their small charges.

The Schipperke is often called "the best house dog" (*le meilleur chien de maison*).

Le Catalogue des Ressources

A **Whole Earth Catalog** *of France. Quite fine, quite fascinating. Should be checked by anyone trying to be comprehensive in any current domain — shelter, soft technology, politics, etc.*

—SB



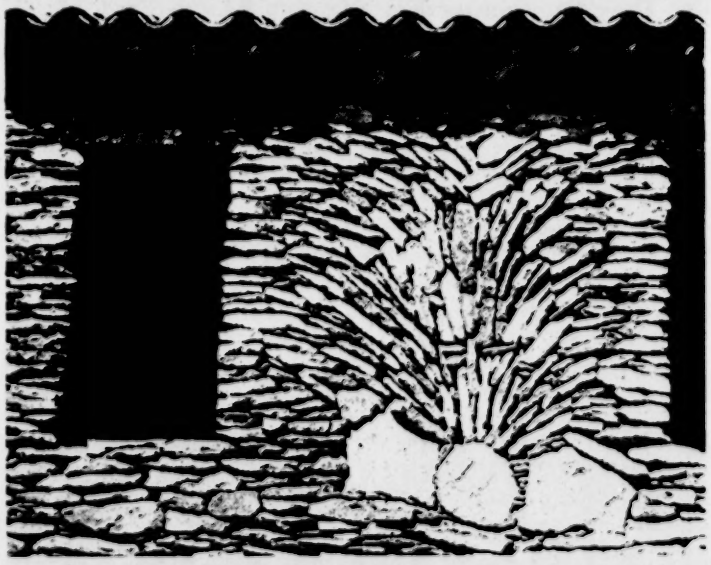
Le Catalogue des Ressources
(Vol. 1: Nourriture, Vêtement, Transports, Habitat)
Gérard Aimé,
Phillipe Bone,
Marie-Paule Nougaret, Eds.
1975; 243pp.
$8.50 postpaid
from:
Catalogue des Ressources
47, Rue Saint-Honoré
75001 — Paris, France

Architecture d'Aujourd'hui
30 F. numéro spécial architectures douces,
n° 170 de mai-juin 1975; 3, rue Bertholdi, 92100 Boulogne

Les architectures douces, si j'ai bien compris, c'est quand les amateurs se mettent à construire. Et c'est plutôt encourageant.

On n'y voit pas que des maisons américaines, c'est rassurant. Reconstruction d'un hameau provençal, construction à la clinique psychiatrique du Chesnay, maison de potier, d'ingénieur, d'anonymes, parc du peuple dans un terrain vague d'un quartier portoricain à New York on été construits par leurs usagers qui ont appris sur le tas. Y en a pas mal qui ont eu des ennuis avec les autorités au début, pour finir décorés, cités officiellement encouragés. Comme quoi le peuple a du génie; le seul architecte (doux) qui parle c'est Sim Van Ryn et il parle, bien, de l'avènement du Natural design. Les photos sont très belles, la couverture est de Magritte.

Le reste de la revue, intitulé Critique, c'est trop intellectuel pour moi, je n'y ai rien compris.



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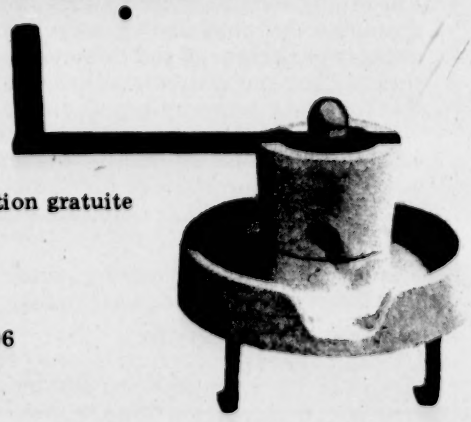
Moulins à céréales
S.A.M.A.P.
avec meules en pierre à usage familial documentation gratuite sur demande à
S.A.M.A.P.
B.P. 18
Horbourg-Wihr
68000 Colmar
tél. (89) 41-38-96



MEMORY ONE:
GETTING STARTED IN ORYGUN

by David Shetzline

When I first came west Liberace reruns were very big. At noon I would stop the machinery and come off the Bishop farm in eastern Oregon to eat in the house Grandfather Bishop had built himself of ancient Douglas fir. Its floorboards – twenty growth rings per inch, in places eighteen inches wide – wore like eastern oak. In her 1960 Sears Roebuck kitchen Grandmother Bishop laid out a four-vegetable-three-meat-five-pickle-two-potato-dessert-choice-coffee-milk-tea-cream-toothpicks dinner all the while watching Liberace and humming along. Dutifully I composed my face and entered the spirit of the daily Happening. And so – as they say – by and by my pattern was to freshen up in deference to the *madde artiste*, stripping down a layer, washing, kicking the worst of the caked mud from my boots by the old Well Pump.

Grandma and Grandpa Bishop had come west from Illinois in 1901 and dug that well their first winter, the old man lowering himself in a wheelbarrow, then filling the barrow, pulleying until it blotted the sky. Grandma would swing the load onto solid ground, unharness and trundle off to dump. Then reharness and from below in the cold blackness the old man would slowly let the barrow down atop him. His well was six feet wide – you had to have room for the carbon dioxide to mix with air or it would drown you – and a hundred and fifty four feet deep. He wore out three shovels. And his son – for whom I worked that summer – had those very instruments down in the cellar along with his collection of thousands of obsolete tools. We would eat all his food then go down into the cellar and browse amongst ancient horseshoes rope-padded for funeral hearses, a miner's pick made of the barrel of a shot-out .45-70 Winchester, silage saws, boxes of square nails, sled brakes, stump shooters, posthole gougers and two cases of cabinetmaker's tools as delicately calibrated as surgical steel. Bishop had been collecting for years because, he said, they would be valuable on the very day the very last man forgot what the very hell they were ever used for. He had one critter we never did fathom. Looked as if it might have wrenched infected horse teeth, transmogrified bulls into oxen, or simply been a homemade bullwhip braider.

Liberace was smitten with a dimpled singer named Ronnie that summer and every day at one o'clock when we came up from sorting about in all those obsolete hand instruments, there would be old lady Bishop resetting her table while Lee Liberace winked and grinned and rolled his eyes. We would charge our canteens from the pipes going deep deep into that well which had not once run dry in sixty odd years, fill our pockets with biscuits and go back out to work the crops and stock. One day the old lady stopped me with: *Oh I do like his playing, yknow. But if you ever meet him back east, why, don't talk up our*

There is surely an Oregon school of writers. Ken Kesey, with **Sometimes a Great Notion** *and* **One Flew Over the Cuckoos Nest**, *obviously. Don Berry, with* **Trask** *and* **Moontrap**. *Richard Brautigan somewhat. And David Shetzline, with* **Heckletooth 3** *and* **DeFord**. *A certain humor and uncertain violence bonds these people. That, and the disdain of Eastern Literarydom. There seems to be a hope that if the Oregon writers are ignored long enough, they will hush up. Their stories come out of those winters like Northwest Coast Indian masks, okay nailed on a wall, not okay still attached to a human face.*

In this anecdote Shetzline recalls his rite of passage to "the Preserve – this piece of the Republic north from California to Seattle." It is part of a larger work-in-progress.

If David doesn't mind I would like to quote part of our correspondence for what it may tell about CQ *preferences:*

Dear David,

I'm currently on a rampage against two demons of wonderful writers – interpretation and premature autobiography.

I dearly love your anecdotes such as the Bishop farm account and would gladly trepan it and print it. But except for occasional self-dubious asides, I think we should deny our contemporaries and ourselves all this fucking interpretation. Such indulgence leads rapidly to advertising language such as "lifestyle," where we are the commodity. We are far better employed as journalists or field anthropologists, immersed in story. Let other poor drabs do the critiquing.

Readers like to do their own interpretation, and that's right, if we want their intelligence to meet ours.

Send me your anecdotes.

Stewart

country here. There's some people, yknow, best left back there on the television where they're comfortable.

Bishop harvested dryland wheat mainly, but he was always trying out a small wildcat crop. One year it was canary feed, another rhubarb. The last time I visited he inquired discreetly, did I know where a man might get five or six bushels of cannabis seed? That is, of course, of course, get seed if the weed was ever legalized. His eyes burned the old *I'll make a fortune yet* and I was sorry to disappoint. . .That first summer, however, he was wildcatting cocktail onions, having already filled the upstairs of his house with extra wheat. The surplus wheat he explained at great length to me, but it was all subsidy and storage fee, bushel control, government guarantee Greek. Whatever, in an effort to beat the market, he boarded useless rooms and augered wheat to their ceilings. It was hell on the cats because of vermin drawn. About twenty felines prowled – everywhere you looked would be a tabby slipping under an outbuilding, mousetail twitching in her mouth. The night his wheat was harvested and that part he could not store at home was trucked to the government bins we sat on his porch watching the tractor lights of neighbors miles away plowing under their stubble in the coolness. Occasionally a splash of fire beat at the blackness, winked out. It was the custom to kill rattlesnakes by quickly unscrewing your fuel sediment bowl, harassing the snake onto plowed ground, dousing him and throwing matches while he struck at you. The game was to get it all done and the bowl back before the tractor engine used up the carburetor gas and stalled. *But I don't do it*, Bishop sighed. *They keep down the cats. And I'd rather be snakebit than drown another mess of cats.*

I left the next day as the wind came steady from the mountains, smelling of winter and school and – for him – that time when he would put his feet up on the stove and scheme, reading wheat futures, wondering if they would jump enough he could unload his rooms, cut south and sit under a palm tree. That was Bishop's dream and he had made it to Palm Springs often enough to keep whetted. We stared out at the cocktail onions – five acres of pearls half buried in silt, each supporting tiny green shootlets of great delicacy. Bishop asked: *You're going back to New York, right? . . . Well, just supposing I can get these damn onions out and cut and busheled, don't you think it'll ruin the market? I mean, my god, there must be a billion of those silly things out there.*

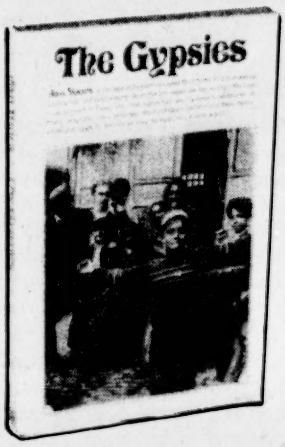
No, I said, I didn't think he should worry too much about easterners handling a billion cocktail onions. And would he postcard me from his palm tree? Then I hitchhiked back with six hundred dollars in my pocket – which wasn't much – but I had gotten a taste of the Preserve and I liked some of its style. Bishop posted that winter: *Rained early. Couldn't get machinery into field until dried some. Onions took all that water, grew big as golf balls. Sold to pickle factory. Made seed cost and labor. Up to our whazoos in snow. Wheat cats mice snakes family doing fine.* ■

The Gypsies

Jan Yoors reveals what is at the healthy heart of Gypsy life though the facts of that life may have changed drastically since he ran away at the age of twelve (about 1932) and began traveling Eastern and Western Europe as the adopted son of a Lowara family. Yoors does not lean on sociological lingo nor resort to the sensational, and his admitted nostalgia is sometimes thick but never overwhelming.

—Robert Lockhart

The Gypsies
Jan Yoors
1967; 256pp.
$2.25 postpaid
from:
Simon and Schuster
One W. 39th St.
New York, NY 10018
or Whole Earth



Pulika sat half crouching on an upturned bucket by the log fire. Little Palko stood between his knees, leaning with his elbows on Pulika's sturdy thighs. Occasionally the child pulled up his legs and swung nonchalantly or gravely observed his grandfather smoking. Pulika leaned over and loudly whispered in his ear, pointing at Tshaya who crouched nearby cleaning some vegetables. Half reluctantly, the child fairly shouted in baby talk something which to him was a bad or naughty word. Tshaya pretended at first to ignore him but Pulika encouraged the child to persist in teasing her. These words – like kula or pulpa – had no particular meaning except as a symbolic release of pent-up displeasure or of mockery, but when repeatedly directed at one person they were considered to be provocative. Tshaya looked up and threateningly shook her open hand in a chopping motion. Still prodded by Pulika, little Palko repeated his words and Tshaya pretended increasing anger, till she took the trouble to get up and come over to hit the child and the grandfather both. The child turned to Pulika for protection, which he gave with mock exaggeration. The insult was repeated endlessly and as the child displayed less fear, Tshaya gradually became more violent. The boy received more of the mock slaps and thus, in playfulness, lost his fear of them. There were bouts of angry, protesting cries as Tshaya hit him harder than expected, but the "lesson" was repeated until the child was able to continue insulting independently of his reasonable fear of immediate consequences. This entire mock battle was controlled by tacit understanding between the grown-ups and was never allowed to get out of control. The purpose of this game was to teach the child not to do or refrain from doing anything because of fear of physical pain, and to prevent him from developing a cowardly disposition. The only form of discipline the Lowara recognized ultimately was self-discipline, or in other words a discipline of responsibility. To the Lowara, fear was the symbolic attribute of Beng, or Evil, because it destroyed man's soul.

Are you not scared by seeing that the gypsies are more attractive to us than the apostles?

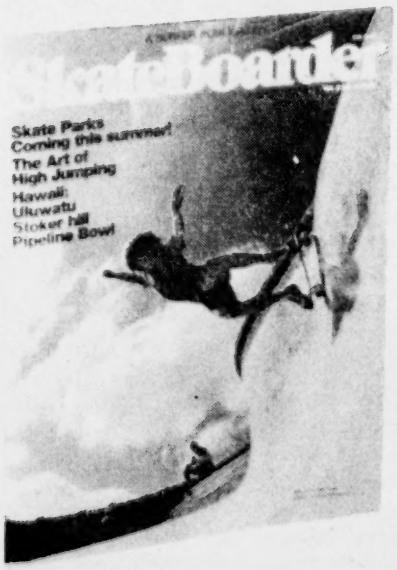
Emerson

Nomadics

SkateBoarder

Have you vaguely noticed an increase in skateboard activity lately? Well, it isn't a mere return of the fad of the early 60's, it is truly a new thing. Or, more accurately, it's a natural evolution of the early sport into a hard-assed (scar tissue) sport-art more than a little related to surfing and downhill skiing. The inciter of this renaissance has been the new hardware. Remember when boards cost $4.95? Now a good board is more like $60.00. Aircraft aluminum, sealed bearings, carefully controlled flexibility, extruded fiberglass, and highly developed suspensions have made the difference between real machines and yesterday's toys. In particular, the wheels are different. They're cast from arcane brews of urethane and are available in a confusing array of sizes, shapes, colors, and stickyness. Stickyness? Yup. The new wheels grip the road like a Botts Dot. They're very much quieter too, which tends to aid the rather tarnished reputation of board freaks. And along with all this there has developed an organized sport with association-controlled competitions, full-length films, and a very sophisticated magazine that provides a showcase for equipment and heroes (many in their late 20's and older). **SkateBoarder** *also features articles on technique and form, both considered very important by riders. The articles and advertisements are in the language of the day, which may well prove more interesting as a phenomenon than the boards. Unless you're of the brittle-bone age, you really oughta try one . . . . For equipment advice, consult your local skaters.*

—J. (Spongeybutt) Baldwin



SkateBoarder
Warren Bolster, ed.
$1.00/single issue
$5.00/yr. (6 issues)
from:
SkateBoarder Magazine
P.O. Box 1028
Dana Point, CA 92629

Skateboarding

And here is the inevitable instruction manual. Not bad, either. But your best bet is to put on some heavy clothes, grab your board and head to the hill where some hot ones are riding, and have at it.

—J. Baldwin

Skateboarding
Jack Grant
1976; 108pp.
$3.95 postpaid
from:
Celestial Arts
231 Adrian Rd.
Millbrae, CA 94030
or Whole Earth

Kick-Turns: Katharine Hepburn does the grapevine much the same way she would when figure-skating.

Auto Enthusiast Directory

Many owners of old cars and trucks want to keep them running. This is especially true abroad. (How do you think that '39 Ford schoolbus to Tamazuanchale keeps it up?) Parts for old cars are available used, of course, and many of them are available new: there are small manufacturers making them mostly for the foreign trade. This catalog tells who and where.

—J. Baldwin

Auto Enthusiast Directory
$3.95 postpaid

from:
Carl Hungness & Associates
Box 24508
Speedway, IN 46224

We're not inferring there are dis-reputable characters within the hobby of old cars, we guarantee it.

Polarguard at Snow Lion

We're beginning to get field reports in quantity about how great Polarguard is to live with. It doesn't lump, pack down flat, leak, go flat when wet, or give trouble when washed. Items made from it can be washed often by normal methods, and the stuff actually gets better with age. (Down, in contrast, loses all insulating ability when wet, and is slowly destroyed by even the most careful washing.) Best news last: Polarguard is a lot cheaper than down. While it isn't as light as down and won't quite pack as small, Polarguard will keep you warmish even when wet, and it dries out easily. This makes it ideal for canoe and rainy climate camping. Down will still be better in dry high cold for most uses, but how many of us get into that? The word also seems to be that Polarguard is clearly superior to other synthetic stuffings, so look for the label. One of the best places to get Polarguard garments and sleeping bags is Snow Lion. They have a very well-deserved excellent reputation. Nice people too.

—J. Baldwin

Snow Lion
Catalog
from:
Snow Lion
P.O. Box 9056
Berkeley, CA 94701

YOSEMITE VEST

The YOSEMITE is a double quilted vest made with two offset layers of Polarguard quilted to 1.9 oz. ripstop nylon. This double layer construction makes it considerably warmer than sewn-through vests and makes it perfect for use over a long sleeve shirt as well as under a light shell or insulated parka. The Yosemite has been successfully combined with our POLARGUARD EXPEDITION OVERPARKA for use by climbers at high altitude and for prolonged activity at low temperature. It features two outer cargo pockets with Velcro closures, hand warmer pockets, a No. 5 Delrin zipper, a 3" Polarguard filled collar, and a rear kidney extension. All inside pieces are joined by Overlock Stitching and all stress points are bar tack reinforced. We call the YOSEMITE the "stay warm, stay dry" vest.

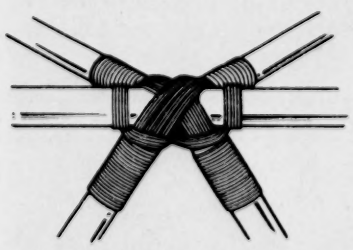
Average Total Weight: 15 oz.
Available in Royal Blue, Spruce Green, or Tan
XS, S, M, L, XL $24.50

Man Powered Flight

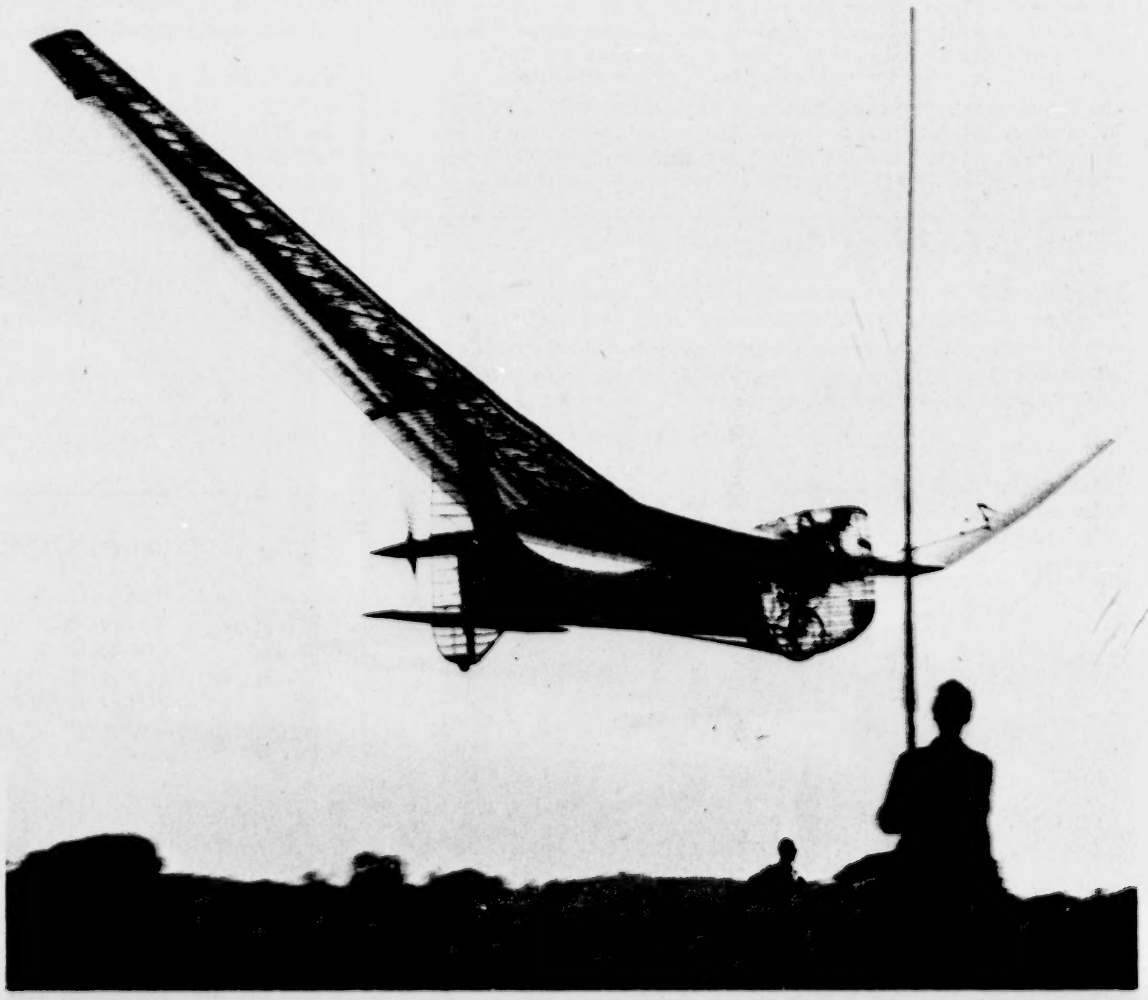
I know . . . who needs it? But history has proven again and again that when men are excited by something, their minds work better. It doesn't seem likely that man powered aircraft will have any particular use other than winning the Kremer prize of £50,000. On the other hand, there's a high probability that useful things will be learned from the effort. Something good just has to come when men think in terms of their own energies combined with efficiency, lightness and clever analysis. This book gives the history of man powered flight together with highly detailed studies of the aircraft. Lots of pictures.

—J. Baldwin

Man Powered Flight
Keith Sherwin
1971 (revised 1975); 192pp
$5.45 (£2.95)
from:
Model & Allied Publications
Argus Books Ltd.
Station Road, Kings Langley
Hertfordshire, England
or Whole Earth



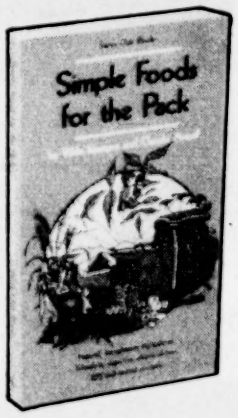
Laced joint for thin metal tubes



Simple Foods For The Pack

Freeze-dry foods are light, middlin' tasty, very expensive and carry a high energy subsidy of fossil fuel in their preparation. Some claim they aren't very nourishing. Useful alternatives have not been easy to come by, and I personally never seem to have pencil and paper to copy down the recipe when I encounter someone else with good chow on the trail. This book ought to help a lot. 175 trail-tested recipes made from "natural ingredients." Meatless and white sugarless too. I haven't tested any myself, but they sound like they should do the deed. Reader-eater feedback welcome on this.

—J. Baldwin



Simple Foods For The Pack
Vikki Kinmont and Claudia Axcell
1976; 212pp.
$4.95 postpaid
from:
Sierra Club Books
530 Bush St.
San Francisco, CA 94108
or Whole Earth

ANISE MILK DRINK (Hot and Cold)

1 quart

The delicate flavor of anise makes this sweet drink a favorite.

1-1/4 C milk powder
1 teaspoon anise seeds
2 tablespoons honey
4 cups water
butter, for hot drink

COLD: for a day when you are leaving a camp set up and may be going on a day hike away from camp, and you know you will want a good drink when you return. In plastic quart bottle, combine milk powder, honey, and anise in 2 to 3 cups water. Put on lid and shake well. Set bottle on a rock in a place where the sun will hit it all day. When you return to camp in the evening, fill rest of container full of water and shake. If it is still too warm, place bottle in a stream for a short while if possible. Strain and serve.

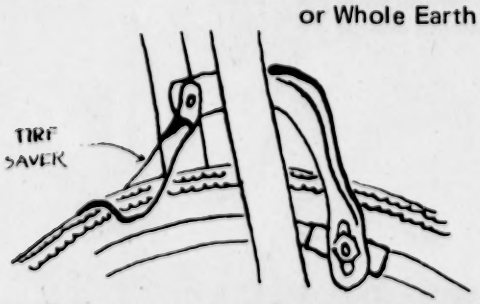
HOT: combine all ingredients in saucepan. Stir well and heat through until quite warm, but do not boil. Remove from heat, cover, and let sit for 5 minutes. Strain into cups and add a lump of butter in each cup. Children love it!

How to Fix Your Bicycle

If you dislike reading an entire chapter just to learn how to regrease your bike's wheel bearings, then this may be the right book for you. In 48 pages it taught me all I needed to know to get my ancient 3 speed in running condition and keep it there. A simple, complete, cheap book.

—Pat Murphy

How to Fix Your Bicycle
Helen Garvey
1971; 48pp.
$1.00 postpaid
from:
Shire Press
P.O. Box 40426
San Francisco, CA 94410
or Whole Earth



TIRE SAVERS (used on 10-speeds with sew-ups or thin tread tires) are pieces of wire that attach where the brake bolts on. They knock off pieces of glass and such before they dig in and cause a flat. They work!

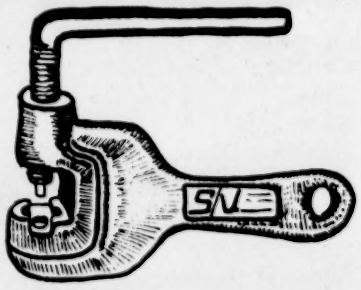
Bicycle tool specialists

Are you tired of carrying your bike back to the repair shop because you need a special crank extractor tool or a freewheel remover? The Third Hand, in Eugene, Oregon, offers the most comprehensive selection of bicycle tools available in one catalog. They offer a much wider variety of tools than you can find in most good pro shops. If there is no tool on the market for your specific need, they will design one for you at a very reasonable rate. For example, they market an excellent wheel truing stand which is probably the best you can buy for $150.00 but how many cyclists do you know with that kind of moola? Consequently The Third Hand designed a very good, reliable wheel truing jig that is more than adequate for $25.00. Their over-all prices range from approximately $ .50 for the handy indispensable items to $180.00 for the ultimate in tool technology.

Incidentally, The Third Hand has simplified mailing and handling costs so beautifully that one wonders if the U.S. Postal Service could not employ their system on mass scale.

—Paul Machak

Catalog Free
from:
The Third Hand
3945 High Street
Eugene, OR 97405



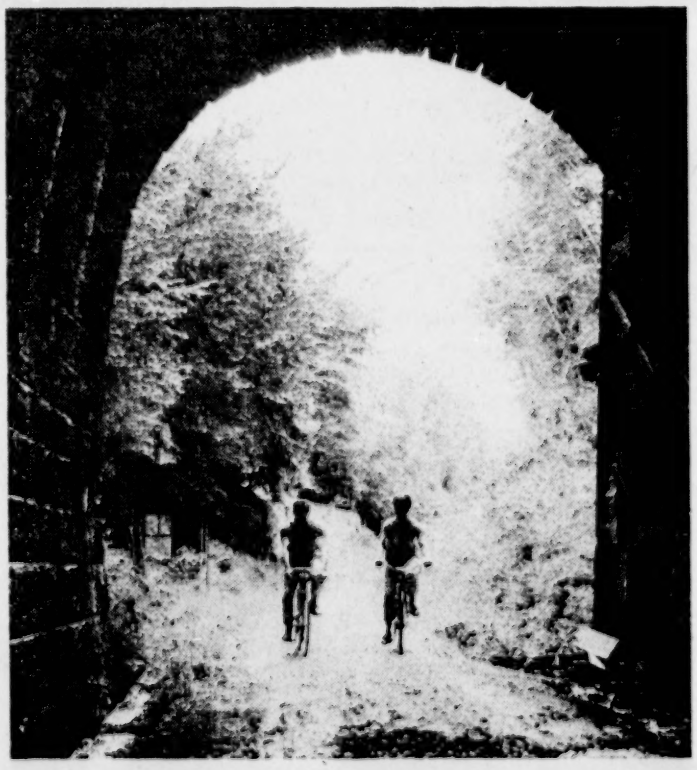
S/V Chain Rivot Tool
Catalog No. 501 $7.50
A very fine rivot tool that is adequate for both shop and home use. It features a calibrated driving pin and a recess built into the tool that holds the connecting links together.

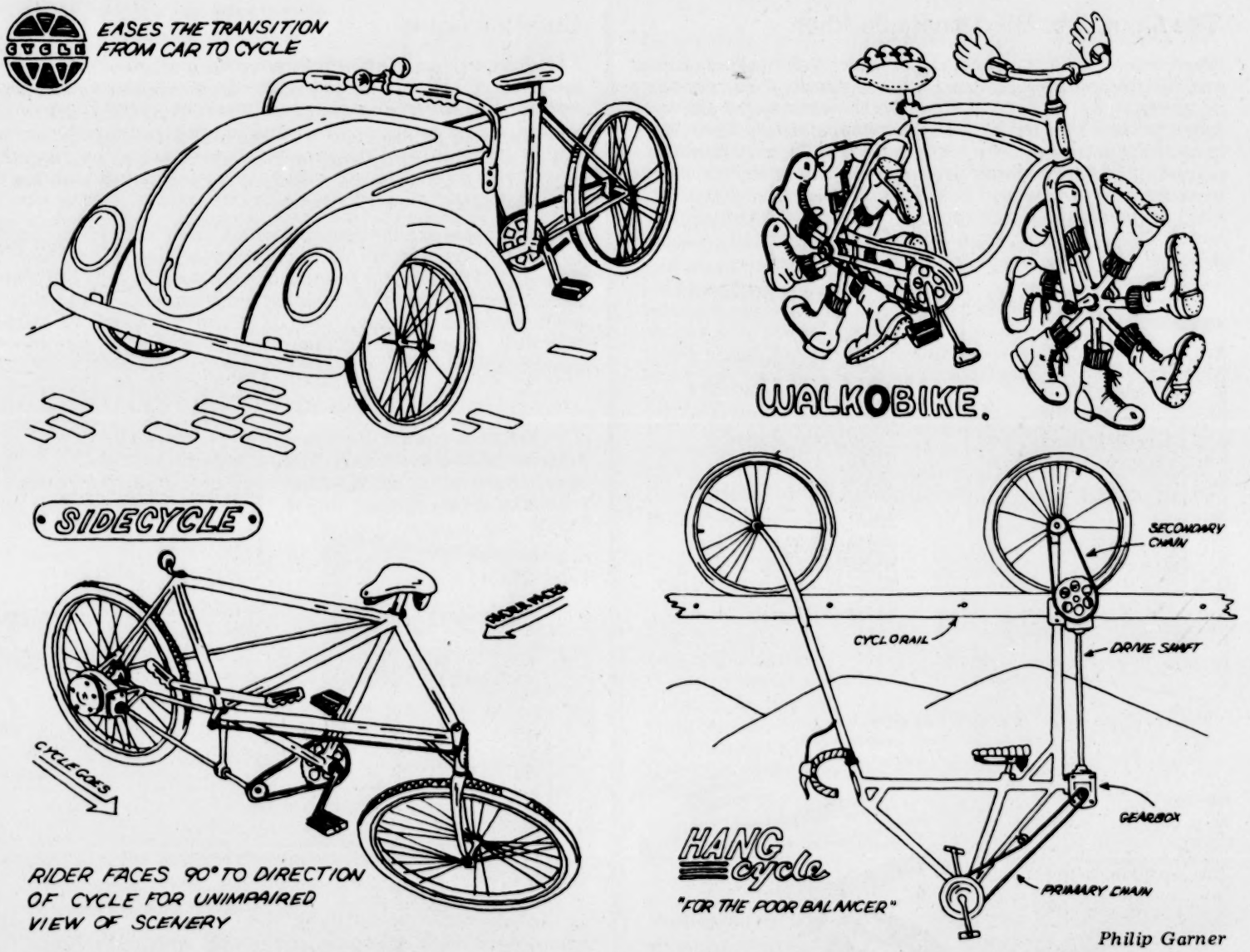
From Rails to Trails

Trains see hills just about as a bicyclist does. So it is that old railroad beds hold a certain charm for use as bike paths. It's being done all across the country. If the opportunity for such a trail comes to your area, this booklet will tell you how to get started with the complex procedures necessary to convert rail to trail.

—J. Baldwin

From Rails to Trails
Citizens' Advisory Committee on Environmental Quality
No. 040-000-00330-4
1975; 68pp.
$1.50 postpaid
from:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402





The Motor Car

If you could see this book it would make you giggle that anyone should review for the noble CQ anything so skinny and obviously meant for children. But I got my reasons.

I'd done assorted brake jobs, rewiring, generator repair, replaced a couple of blown headgaskets, installed a new engine and later a new transmission, and other stuff; so that I counted myself more-than-averagely sophisticated about auto mechanics when I encountered this little book. "Oh, how cute. Lemme see it."

But once inside, I read the whole thing with intense concentration. It doesn't tell you how to fix anything; instead it shows you how it all works, what the parts do and how they relate to one another. My favorite thing in the book is a drawing that shows, all set up in working order, the crankshaft and camshaft joined by timing chain, and a piston, push rods, rocker arms, and valves, all dancing together. I could have said it before, but the drawing is a revelation.

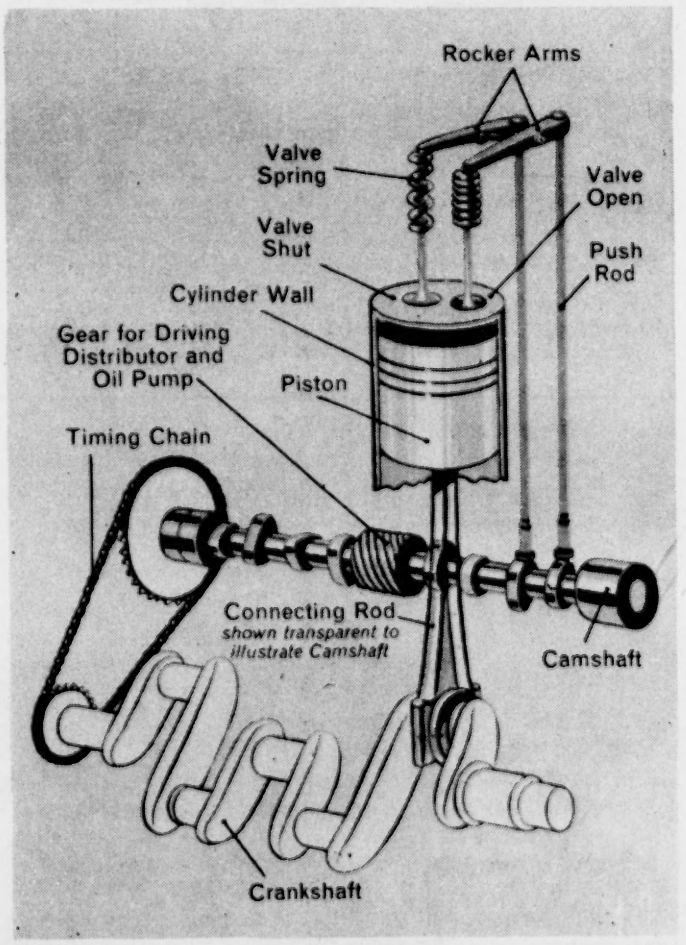
—Judith Van Slooten

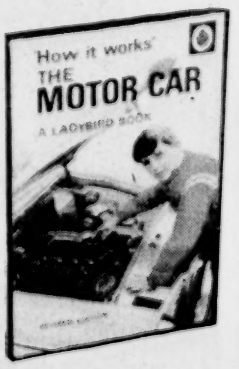
Yup.

—JB

Makes me curious about other books in the Ladybird "How It Works" series — Farm Machinery, Television, Telephone, Rocket, Computer, etc.

—SB





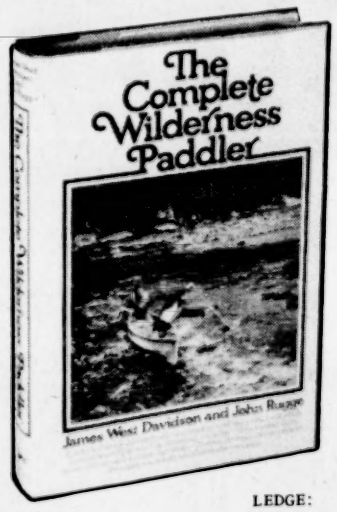
The Motor Car: How It Works
David Carey
1965, 1971; 50pp.
$1.00 (21p.)

from:
Ladybird Books, Ltd.
Loughborough
Leicestershire, England

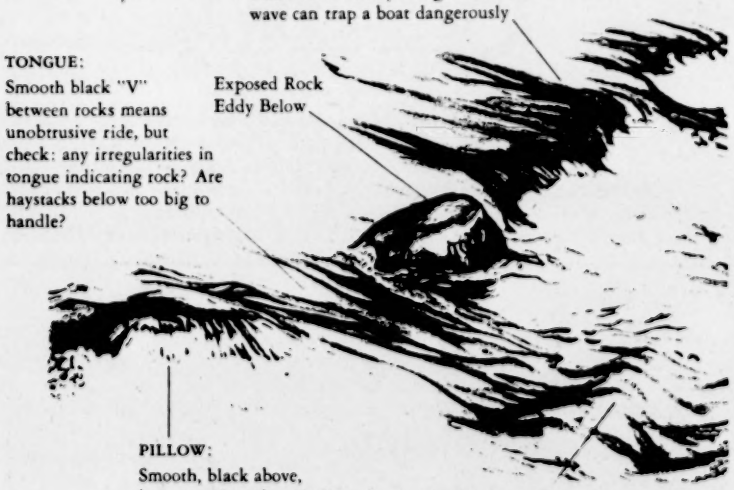
The Complete Wilderness Paddler

When books begin to appear on a subject that has had limited media coverage, the first one is usually pretty good. It has no competition, and the lack of public awareness of the subject means that the first book can be relatively rich. That book is followed by many imitators hoping to cash in on its success. The best of those advance the state of the art in tiny increments as various viewpoints and techniques are presented. Then somebody gets it all together and says, "This is it, for now." This is that for now. And a special mention must go to the illustrations, which are quite exceptional.

—J. Baldwin



The Complete Wilderness Paddler
James West Davidson and John Rugge
1976; 266pp.
$10.00 postpaid
from:
Alfred A. Knopf, Inc.
455 Hahn Rd.
Westminster, MD 21157
or Whole Earth

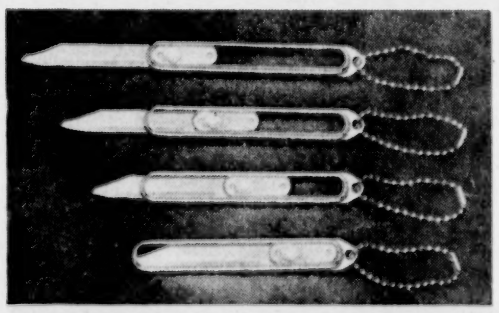

LEDGE:
More visible from below than above. Foamy trough and back wave can trap a boat dangerously
TONGUE:
Smooth black "V" between rocks means unobtrusive ride, but check: any irregularities in tongue indicating rock? Are haystacks below too big to handle?
Exposed Rock
Eddy Below
PILLOW:
Smooth, black above, but conceals rock, as indicated by drop visible when viewed from below. Aerated foam eddy just past it.
Standing waves or haystacks. Usually below a tongue. Regular configuration (no foam holes or irregular pillow type forms) means clear passage unless they get too big.

Christy Knives

Did you know that the good old Christy Knife is still available? They've been Good Stuff for 85 years now!

—J. Baldwin

Genuine Christy Knife
$3.50 plus $ .40 postage
from:
The Christy Co.
905e Dickinson St.
Fremont, OH
43420
or from your local dealer



Survival Guns

I have about a yard of various gun books on my book shelves and this one unquestionably gives the reader more reliable information for less money than any others that I have seen.

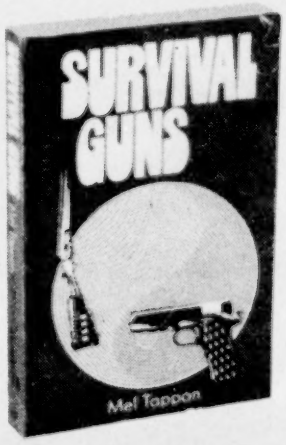
The emphasis of the book is on the practical selection and use of all types of firearms for both defense and securing food. The information is intended for the person who has either a "retreat" or a homestead.

Of equal value are the sections which cover the related fields of accessories, ammunition, maintenance, and non-firearm weapons. Whether for mundane items such as lubricants or exotic accoutrements such as cartridge converters and sub-caliber devices (for, say, firing a .22 rimfire from a 12-gauge shotgun), Tappan has produced a book that is as close to being a good one volume reference as I have seen.

—John C. McPherson

This seems as good a place as any to indicate **The CQ***'s support of bills outlawing "Saturday night specials" — short cheap handguns whose entire function is to threaten, maim, or kill humans.*

—SB



Survival Guns
Mel Tappan
1976; 458pp.
$7.95 postpaid
from:
The Janus Press, Inc.
P.O. Box 75455
Los Angeles, CA 90075
or Whole Earth

GUNSMITHING TOOLS AND SUPPLIES

All of these firms put out good catalogs which you should have but Brownells', at $2, is a must.

Brownells, Inc.
Route 2, Box 1
Montezuma, Iowa 50171

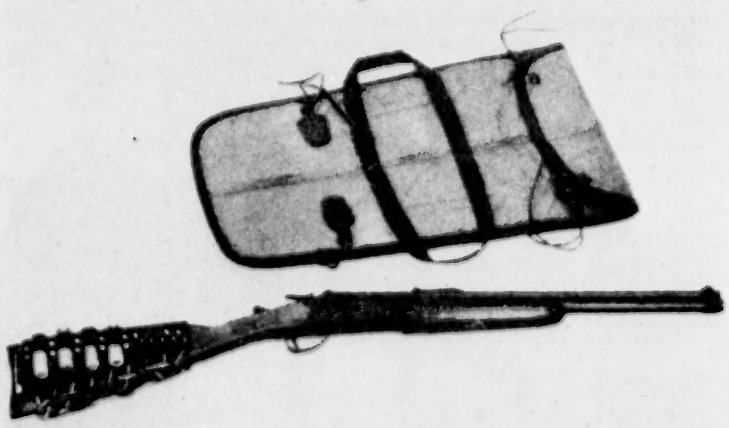
Brookstone Company
121 Vose Farm Road
Peterborough, New Hampshire 23458

These people make one of the best knife sharpening devices in the world, as well as a very useful small stone for touching up triggers and deburring parts.

Louis N. Graves Company
Box 308
Anoka, Minnesota 55303

Frank Mittermeier, Inc.
3577 E. Tremont Ave.
P.O. Box 2
Bronx, NY 10465

Williams Guide Line Products
Williams Gun Sight Company
7389 Lapeer Road
Davison, Michigan 48423



The Savage over/under combination guns are among the most versatile survival tools. Above: Model 24C Camper's Model with takedown case and author's lace-on ammo carrier. Additional rounds are stored in a trap in the butt.

Canoe Poling

In an unguarded moment a river person will admit that there is one anti-environmental aspect to the bit: going upstream requires a car. But you can do it with a pole too, it turns out. Rivers and swamps that are inaccessible to any other boating technique are made into practical routes either direction by polework. This book reveals the secrets heretofore only known to a few. All you need besides the book is a canoe or similar craft, a pole, (they tell you how to make one) and dry clothes . . . Looks good to me! I'm getting a pole right away.

—J. Baldwin

Canoe Poling
Al, Syl & Frank Beletz
1974; 148pp.
$4.95 postpaid
from:
A. C. MacKenzie Press
Box 9301
Richmond Heights Station
Richmond Heights, MO 63117
or Whole Earth

Commercial fishing training

Anyone interested in becoming a commercial fisher (formerly fisherman) can find a school in the field by writing to the National Sea-Grant Program, 3300 Whitehaven St., N.W., Washington, D.C. 20235.

Paul Saltzman
Skokie, Illinois

Dear Ms. Sharp:

In reply to your recent inquiry, the following universities have Sea Grant Programs in commercial fisher training:

University of Alaska
American Samoa
Oregon State University
University of Rhode Island
University of Washington.

If I can be of any more assistance, please let me know.

Sincerely,

Ernest Greenwald
Program Analyst
National Sea Grant Program

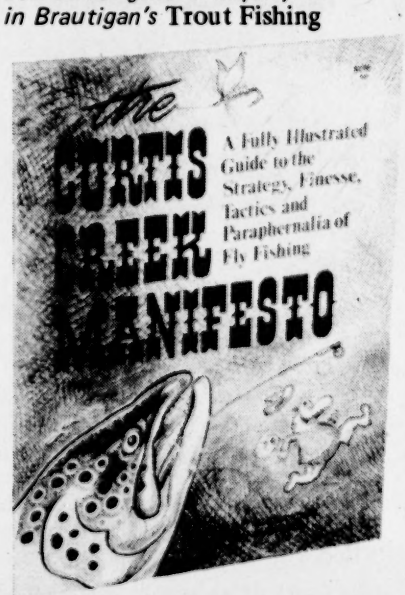
The Curtis Creek Manifesto

At one time I owned more than 25 books on fly-fishing for trout. Generally, all were confined to a rigid, traditional form and were highly technical or philosophical. Hardly appropriate tools for one of life's more important matters — passing an understanding and appreciation of trout fishing on to others, namely my children. This book's contemporary, simple style, cartoon drawings and broad overview make it useful for fostering this initial awareness.

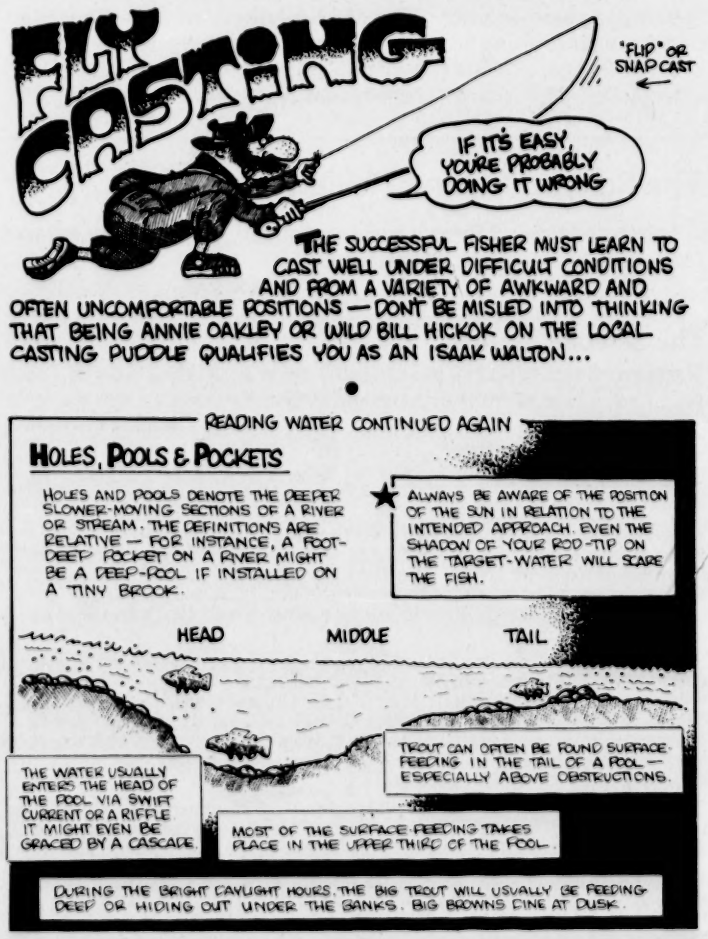
The Curtis Creek Manifesto *projects the need of major personal commitment to master the complex concept of new awareness that trout fishing offers. On the one hand the sadness of knowing how fragile and in need of defense trout waters are and on the other — personal level — it offers a chance to immerse one's self and become for at least a little while, closer to nature. To know that the human being, like the trout, is affected by weather, food supply and habitat.*

Fly-fishing, by the way, need not be a matter of killing fish. It's one of the few pursuits where the skilled fly fisherman can catch and release alive the now wiser quarry. In conclusion this book is an excellent source for general inquiry on the subject — one I expected in Brautigan's **Trout Fishing in America.**

—Huey D. Johnson



The Curtis Creek Manifesto
(A Fully Illustrated Guide to the Strategy, Finesse, Tactics and Paraphernalia of Fly Fishing)
Sheridan Anderson
1976; 47pp.
$2.95 postpaid
from:
Salmon Trout Steelheader
P.O. Box 02112
Portland, OR 97202
or Whole Earth

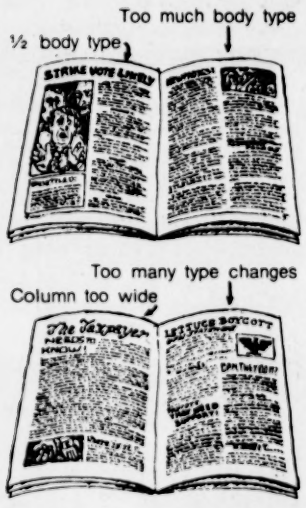

FLY CASTING
"FLIP" OR SNAP CAST
IF IT'S EASY, YOU'RE PROBABLY DOING IT WRONG
THE SUCCESSFUL FISHER MUST LEARN TO CAST WELL UNDER DIFFICULT CONDITIONS AND FROM A VARIETY OF AWKWARD AND OFTEN UNCOMFORTABLE POSITIONS — DON'T BE MISLED INTO THINKING THAT BEING ANNIE OAKLEY OR WILD BILL HICKOK ON THE LOCAL CASTING PUDDLE QUALIFIES YOU AS AN ISAAK WALTON...
READING WATER CONTINUED AGAIN
HOLES, POOLS & POCKETS
HOLES AND POOLS DENOTE THE DEEPER SLOWER-MOVING SECTIONS OF A RIVER OR STREAM. THE DEFINITIONS ARE RELATIVE — FOR INSTANCE, A FOOT-DEEP POCKET ON A RIVER MIGHT BE A DEEP-POOL IF INSTALLED ON A TINY BROOK.
ALWAYS BE AWARE OF THE POSITION OF THE SUN IN RELATION TO THE INTENDED APPROACH. EVEN THE SHADOW OF YOUR ROD-TIP ON THE TARGET-WATER WILL SCARE THE FISH.
HEAD
MIDDLE
TAIL
THE WATER USUALLY ENTERS THE HEAD OF THE POOL VIA SWIFT CURRENT OR A RIFFLE. IT MIGHT EVEN BE GRACED BY A CASCADE
TROUT CAN OFTEN BE FOUND SURFACE-FEEDING IN THE TAIL OF A POOL — ESPECIALLY ABOVE OBSTRUCTIONS.
MOST OF THE SURFACE-FEEDING TAKES PLACE IN THE UPPER THIRD OF THE POOL.
DURING THE BRIGHT DAYLIGHT HOURS, THE BIG TROUT WILL USUALLY BE FEEDING DEEP OR HIDING OUT UNDER THE BANKS. BIG BROWNS DINE AT DUSK.

Communications

How to Do Leaflets, Newsletters and Newspapers

There's no leverage like local publishing — it's cheap, fast, relatively easy, and outrageously effective if done well. In this booklet is all you need to do it well. (Technically, at least; the rest is character.) The booklet is its own best demonstration. I wish I'd had it when we started.

—SB



How to Do Leaflets, Newsletters and Newspapers
Nancy Brigham
1975; 44pp.
$1.43 postpaid
from:
The New England Free Press
60 Union Square
Somerville, MA 02143

Editing is mostly a matter of reading and watching your own reactions. Here are some questions to ask yourself about an article which you are editing:

Did you understand it all the way through? If you're confused for a while and only start to get the idea at the end, some facts or ideas are probably in the wrong order. A less sympathetic reader won't take the trouble to figure out what the story means. Did you get confused because the writer made you think s/he was going to talk about one thing, and ended up talking about another?

Are there extra words that don't sound like normal speech? If someone said to you, "The MBTA announced it will begin a new evening security program," that would sound pretty strange. "More police will patrol subway stations after 5:00 PM." is simpler and gives real information.

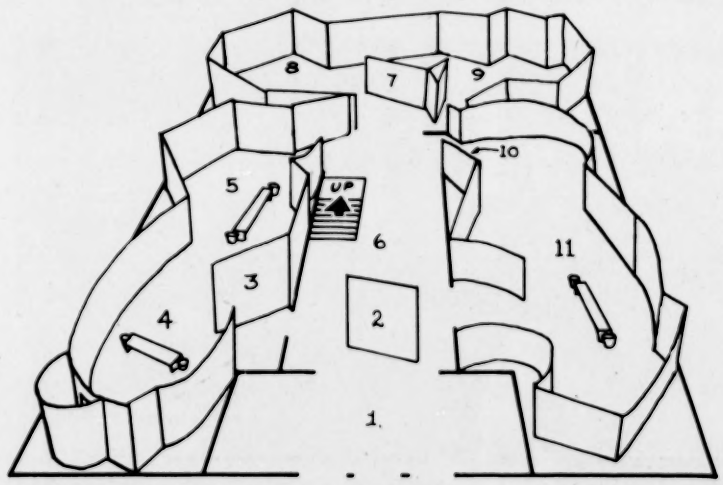
Help! for the Small Museum

A straight forward — down home — step by step — how to — handbook — for those interested in building simeple — low cost — exhibits and displays. It is what its' titale says "Help! for the small museum." Good access to materials and suppliers section with names and addresses, for those who live 'out of town.' Not much news for those concerned with reaching the media-fed audience, the 'art' of storytelling, or imaginative techniques, but maybe that's another book . . . or two. A bit expensive, but like all tools, if you use it it's cheap at twice the cost. It feels good.

—Gordon Ashby

Help! for the Small Museum
(Handbook of Exhibit Ideas and Methods)
Arminta Neal
1969; 199pp.

$9.95 postpaid
from:
Pruett Pub. Co.
3235 Prairie Ave.
Boulder, CO 80301
or Whole Earth



FIRST FLOOR PLAN for functional outline of a museum

The Science Fiction Review

A solid monthly of expert reviews. And not a damned frill extra.

—SB

The Science Fiction Review
Martin Last, Ed.
$10.00/yr (12 issues)
Single copy $1.00

from:
The Science Fiction Review
56 8th Ave.
New York, NY 10014

Kilgore Trout, Venus on the Half-Shell, Dell, 95¢
Eliot Rosewater considered him the greatest science fiction novelist who ever lived. We luckily have Kilgore Trout's work available in paperback form now. Even if Rosewater's opinion isn't shared, Venus on the Half-Shell isn't quite like any other book.

Simon Wagstaff is the Space Wanderer; a man without a planet (all water being precipitated from the atmosphere drowning everyone else on Earth). He finds a Chinese spaceship atop Mt. Ararat equipped with 69X drive. It can travel at 69,000 times the speed of light. Simon sallies forth across the cosmos seeking the answer to his primal question: "Why are we created only to suffer and die?"

Simon is seduced by Queen Margaret of Shaltoon and given an immortality potion. It doesn't provide him with any answers. The Shaltoonians, moreover, have no word for "love."

On each planet he visits, Simon finds that other aliens, the Clerun-Gowph, have been there before him. The clue is always the same one: a gigantic candy-heart-shaped structure millions of years old.

He causes difficulties on Giffard between the pyramid-shaped, earth-bound females and the zeppelin-shaped, gad-about males. They label him "Simon the Sodomite." Here too, he meets a gorgeous intelligent, female "robot" named Chworktap.

The inhabitants on Lalorlong have turned into tires. Their basic philosophy is "Keep rolling." The people of Dokal all have tails. Simon is fitted with one before visiting the wizard, Mofeislop, who informs him: "Wisdom is knowing when to avoid perfection."

Chworktap and Simon are imprisoned on Goolgeas, along with literally *every* native, and don't extricate themselves for 130 years. Such close proximity for so long makes Chworktap tire of Simon. She decides to return to the planet of her creation and fight for the equality of robots. As she puts it: "Time corrupts everything, even immortal love."

Simon continues his quest for 3000 years, finally arriving at the home planet of the Clerun-Gowph. They look like giant cockroaches, and they've been expecting him. Bingo, their ancient leader, knows *the* answer to Simon's question.

That answer will not be revealed here, though other matters can be mentioned. I can't recall anything since *The Stars My Destination* that tossed off so many ideas. In the sometimes searing imitation of the style of Kurt Vonnegut, Jr., Trout satirizes many of our daily pre-occupations. Venus is a comedy of sexual mores, an investigative search for Love, a lampoon of people who require answers to imponderable questions. (Simon Wagstaff is a cosmic ass, seldom an asset to any situation. He suffers from Good Intentions.

Venus on the Half-Shell is improbably funny for most of its length. Still, everywhere there are references to pain: in aborigines possessing a blue aura, in the stars that power the 69X drive, in mastery and slavery of many varieties. Thereby, for all the joking, Trout's intention appears mainly serious.

Or is it? Knowing Kilgore Trout, one is tempted not to take the book too seriously. It could even be a shaggy God story.

—David Pasko

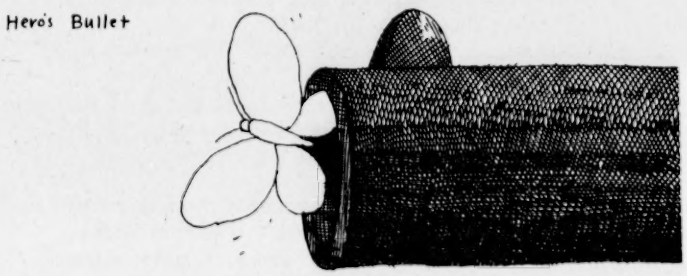
Smile in a Mad Dog's i

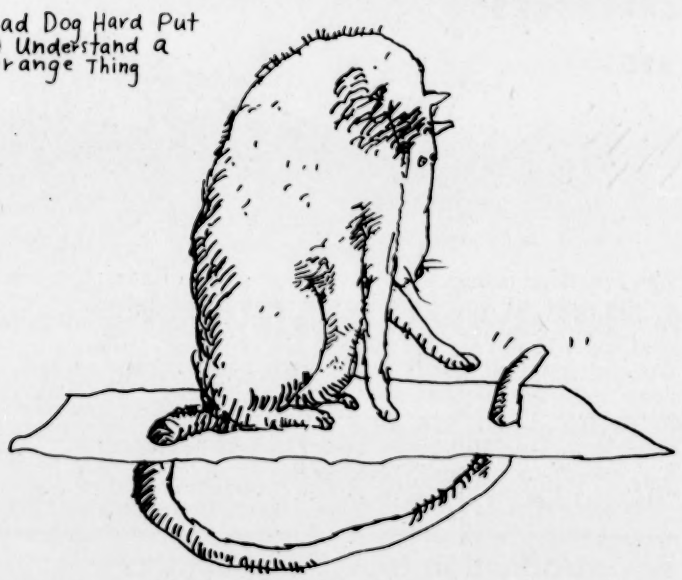
Meta-archetypal situations captured by a vicious eye and shaggy hand, delivered as valentines. A fine book for one you love.

–SB

Smile in a Mad Dog's i
Richard Stine
1974; 96pp.
$3.95 postpaid

from:
Carolyn Bean Assoc.
48 Second St.
San Francisco, CA 94105
or Whole Earth





Earthbooks

A mailorder lending library. Rent any book in their catalog for $ .50, with option to buy at a discount if you want to keep it. Good idea. Good service. They wrote to us recently as follows.

–SB

Hi Andrea,

As you may recall, Earthbooks Lending Library is a national mail-order "library" which reviews and rents all the best decentralist, how-to, back-to-the-land titles now flooding the market, with option to buy any title, rent deductible. We're growing so damned fast we can't believe it. We're especially proud of our decentralist "branch library" approach. Besides the four branches now functioning, we'll be establishing two more in California and New Mexico areas very soon, then subdividing all these areas as fast as customer volume warrants. All branches will be independently owned, tied together loosely only by a common catalog. (Each branch or region will produce at option its own catalog supplements.) We hope eventually to create a major continent-wide decentralist information system which reviews and offers not only the best supportive books (on our feed-back-rich rental/purchase option), but also a network of staffed Earthbooks Reference Centers helping to inform, blend, initiate, and coordinate locally as needed.

This "library" concept, we feel, is potential dynamite for social change considerably beyond our personal ability to handle it all by daily tour de force. We hope therefore to lay down organizational tracks to maximize energy release and then get out of the way.

We're starting a "Decentralist Media" catalog section this fall, which whill offer both random back copies and subscriptions to **CQ, Mother, Countryside, New Age Journal**, and all the other worthy periodicals, newsletters, etc. What are your current subscription and back-copy percent discounts? (If none, we'll run you anyway and get branches to go along with it as a service to the cause.)

Hope **CQ** finds all this newsworthy. Your work is still great as ongoing definition, and I assume Stewart rechecks at least occasionally with the throne.

Lewis Watson
Earthbooks Lending Library

P.S.: If you publish any of this, please indicate Earthbooks catalogs are available for $ .25 from the following branch libraries:

1. Northeastern states: Earthbooks Lending Library, Allegheny Branch, Harmony, PA 16037.

2. Midwest & Ozarks region: Earthbooks Lending Library, Ozarks Branch, Walnut Grove, MO 65770.

3. Southeastern states: Earthbooks Lending Library, Gulf Coast Branch, Rt. 8, Box 664-E, Pensacola, FA 32506.

4. Western States: Earthbooks Lending Library, Northern Rockies Branch, Sweet, ID 83670.

If anybody wants to contact us directly, write: Lewis and Sharon Watson, Earthbooks Central, Sweet, Idaho 83670.

•

How to Earn A Living in the Country Without Farming by William Osgood. Gives scads of ideas as to how other rural folks are turning the few rural bucks they need to get by. While some of its suggestions deal with selling garden produce and the like, the main stress is on how city skills can be (and have been) put to work in the boonies. 120p., $3.95.

A Basic Course in Manual Communication

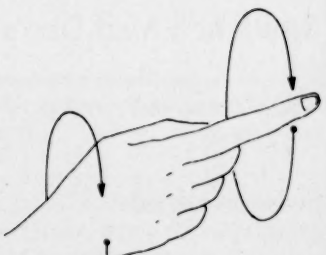
One of those fascinating books that people pick up and immediately have to show each other. It's a manual of sign language for the deaf – not the fingerspelling part but the concept part. It's hieroglyphics of the hands and face, transcending spoken language (would be useful if all travelers had it). I recognize some carryover from Plains Indian sign language. This is a used communication form, richly evolved and evocative.

–SB
[Suggested by Barbara Weissman]

A Basic Course in Manual Communication
Terrence J. O'Rourke, Dir.
Communicative Skills Program
1973; 149pp.
$5.20 postpaid

from:
National Association of the Deaf
814 Thayer Ave.
Silver Spring, MD 20910

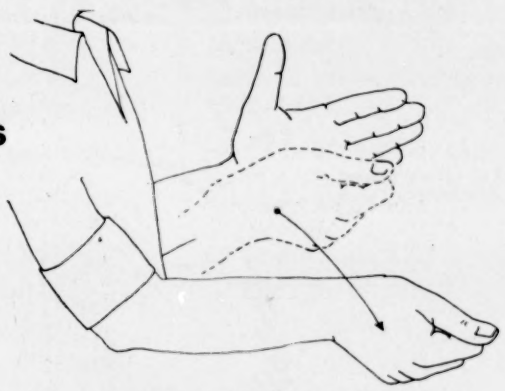
BELIEVE, (FAITH) 475



ALWAYS 83

ABILITY, SKILL, EXPERTNESS

516



Sign language is basically concept-oriented, that is, gestures do the work of words but do not have a gesture-word relationship, rather a gesture-concept relationship.

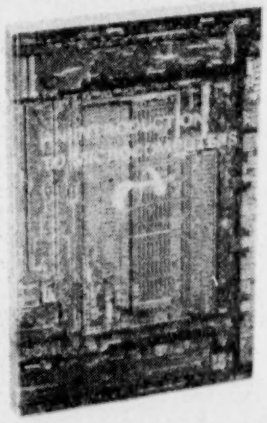
The average prelingually deaf person uses concept-related signs and a syntax that is unrelated to English. The sign for *ability* (No. 516), for example, expresses the concept of *expertise*. Thus it would be used in such sentences as: "He is a *skilled* electrician"; "He has the *ability* to do the job"; "He is a baseball *expert*."

An Introduction to Microcomputers

This book takes up the historical thread of Computer Structures *(see review in Spring '76 CQ), by extending taxonomy into the domain of microcomputers. The book describes lucidly and in detail the architecture of a half-dozen or so micros: the basic structure, support hardware, and programming aspects are given a thorough treatment. In addition, the various devices are meaningfully compared within a common framework. Some of the very general introductory material is of questionable value: if you are seriously comparing processors it's unlikely you'll have much use for an elementary explanation of the binary number system. Despite its few faults of format and layout this book provides a practical and instructive guide to the territory.*

–Marc Le Brun

An Introduction to Microcomputers
Osborne & Associates
1975;
$7.50 postpaid
from:
Osborne & Associates
2950 7th St.
Berkeley, CA 94710
or Whole Earth



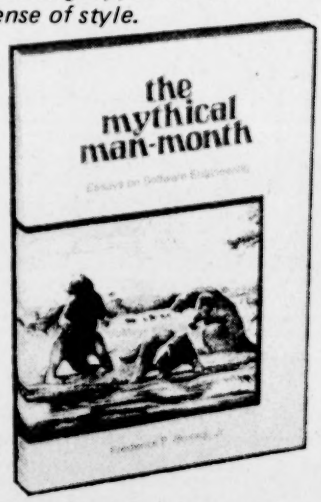
What we are saying is that since the dawn of the computer industry, there have been no radical breakthroughs in the basic concepts of computing. It is advances in solid state physics that has been the computer industry's evolutionary force. New electronic technology has caused computer prices to fall so rapidly that every few years entire new markets have been engulfed by computers.

The Mythical Man-Month

Frederick Brooks is described just inside the front cover as the "father of the IBM System/360." Now the 360 is among the largest computers, and the software, known as OS/360, occupies a small library. Hardly what you would call a Personal Computer. And yet, Brooks comes across not as a paragon of gigantism, but as a perceptive analyst and an engaging writer. There is a sense of responsiveness to the larger context beyond the gates of industry and the walls of academia. For this reason this unified collection of essays has a utility independent of scale. This book explores the human aspects in the creation of artifacts. It is an argument for conceptual integrity, which is ultimately an argument for a sense of style.

–Marc Le Brun
[Suggested by Chip Hay]

The Mythical Man-Month
(Essays on Software Engineering)
Frederick Brooks
1974; 188pp.
$4.95 postpaid
from:
Addison-Wesley Pub. Co. Inc.
Jacob Way
Reading, MA 01867



There is the delight of working in such a tractable medium. The programmer, like the poet, works only slightly removed from pure thought-stuff. He builds his castles in the air, from air, creating by exertion of the imagination. Few media of creation are so flexible, so easy to polish and rework, so readily capable of realizing grand conceptual structures. (As we shall see later, this very tractability has its own problems.)

•

For some years I have been successfully using the following rule of thumb for scheduling a software task:

1/3 planning
1/6 coding
1/4 component test and early system test
1/4 system test, all components in hand.

This differs from conventional scheduling in several important ways:

1. The fraction devoted to planning is larger than normal. Even so, it is barely enough to produce a detailed and solid specification, and not enough to include research or exploration of totally new techniques.

2. The *half* of the schedule devoted to debugging of completed code is much larger than normal.

3. The part that is easy to estimate, i.e., coding, is given only one-sixth of the schedule.

Learning

Stone Soup

Stone Soup *says it is a "magazine by children," and so it seems to be, with some adult help with things like printing, subscriptions, mailing, etc., but with no sign that the children's writing has been edited. The writing is frequently imaginative, sometimes derivative (it's good fun to try to guess what the authors have been reading). Some of the best of the funny stuff is hilarious. It reminds me that while part of the special character of kids' writing may come from writing skills only partly developed, the other part comes from a view of the world fresh, sharp and amused. For parents or teachers who wish, there is available a companion publication, "The Editor's Notebook — a guide for teachers who subscribe to* Stone Soup." *—George Cope*

Stone Soup
William Rubel and
Gerry Mandel, Eds.
$1.25 single copy
from:
Stone Soup
Box 83
Santa Cruz, CA 95063

THE COW

A cow was standing in a field when he saw some cacti. One had a man hung on it. The sun was up and this day was a terrible day. The moon came out, the sun went down, but no one could get to sleep. They just layed down and closed their eyes.

Workshop for learning things

It's only right to point out that this organization (EPILOG, p. 716), run by our present "learning" reviewer George Cope, continues to put out an ever finer line of utterly funky, cheap, brilliant classroom and toy materials. —SB

Catalog
Free
from:
Workshop for
Learning Things
5 Bridge Street
Watertown, MA 02172

OPTICAL BUILDING KIT **20 lb.** **$71.50**

A set of parts that go together in various ways, so you see the same parts making:

microscopes
periscopes
slide viewers
kaleidoscopes
film strip viewers
cameras (several kinds)
magnifiers
telescopes

There are working plans for building everything on our list and suggestions for further experiments.

The pieces can be used as is, or modified to make yet other things. If you have any optical parts around, you can incorporate them into this exploration.

12 big lenses
2 small lenses
1 magnifying mirror
2 small mirrors
1 wood mount
3-1/4 x 4-1/4" modules:
6 plastic mirror
12 glassine paper
24 cardboard
200 Tri-Wall
24 juice cans
black pepper
1 roll black masking tape
1/2 pint black latex paint
1 paint brush
1 2-1/2" hole cutter
1 paring knife
1 can opener
2 4 oz. bottles white glue
1 roll cellophane tape
1 pkg cellophane tape
1 pkg rubber bands
lump of plasticene
instruction booklet

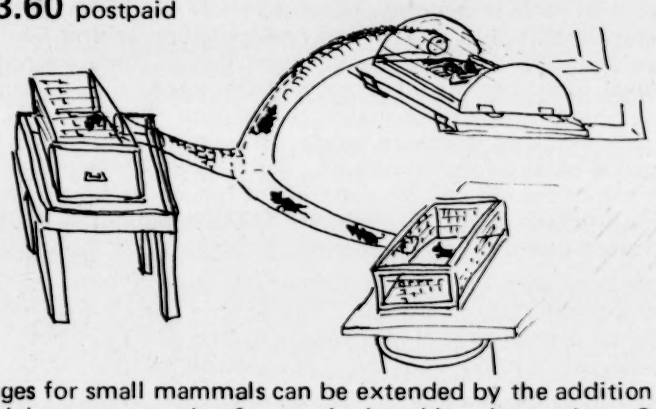
Arranging the Informal Classroom

Brenda Engel's book is about organizing the classroom to make individualized teaching and learning possible. The problems it addresses reveal one of the best-kept secrets of "un-structured" ("open classroom," "informal") teaching — how much attention to structure is required of the teacher. The freedom to pay attention to children's individual needs comes only to teachers who have organized — and organized well — to make it possible. Here's a book that will help.

—George Cope

Arranging the Informal Classroom
Brenda S. Engel
1973; 88pp.
$3.60 postpaid

from:
Education Development
Center, Inc.
55 Chapel St.
Newton, MA 02160



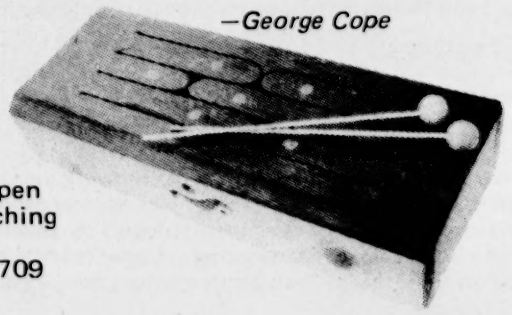
Cages for small mammals can be extended by the addition of aerial runways made of cage wire laced into long tubes. One end of the runway is inserted into the cage, its length suspended from ceiling hooks. The other end of the tube can be dead-ended (by being pinched closed) or it can lead to another cage in a different part of the room. In one classroom I visited, there was a whole network of aerial tunnels, complete with intersections and multiple cages, providing almost as many choices for the gerbils as the children had down below. In another classroom, the gerbils had abandoned their cage altogether and settled down in the runway itself, six feet above the floor, in a warm spot right under the electric light. The female eventually produced a litter of babies there as the children stood around below staring at the process in fascination. There is a hazard of course in overhead runs. Even gerbils urinate occasionally and they are likely to choose an inconvenient spot — over an open notebook or the upturned face of a curious child.

Wooden tongue drum

I don't know about other materials from the Center for Open Learning and Teaching, but I sent $ .60 for their material on the wooden "tongue drum" and got two sheets of paper containing some history of the Central American drum and a sheet of instructions on how to make a tongue drum out of wood.

I've made tongue drums before, and I like these plans as well as any I've seen. The plans are clear, tools and materials required are simple ones (although East Coast folk might like to know that red or white cedar shingles make an acceptable substitute for the exotic redwood called for in the plans). The drum is a beauty — versatile, responsive and a tone that will haunt you! All in all, good info at a good price!

—George Cope



Catalog
Free
from:
The Center for Open
Learning & Teaching
P.O. Box 9434
Berkeley, CA 94709

Another classroom dictatorship

Carl Sagan was especially impressed by Ron Jones' article "Take As Directed" in the Spring '76 CQ because his friend Daniel Kunitz had had a similar experience of students loving to be dictated to. Carl urged Kunitz to write us his experience.

–SB

Dear Stewart Brand,

I read with interest and a real sense of understanding, Ron Jones' experience with his Third Wave. Above all, it demonstrated what the truly creative teacher can do when trying to convey a difficult concept to his students. Though it may have answered the student's question about the German people, it raised more serious questions which challenge the underlying values of our own society, i.e., independence, freedom of inquiry, freedom of choice, etc. What Ron found happening to his students and even to himself, though frightening, can be adequately documented throughout the history of man. I can also document this experience with similar simulations which I have conducted on several occasions. My objective was different (i.e. to study the nature of revolution) but the initial experiences were similar: strong sense of identity with the cause, pressure to conform, complete lack of tolerance for deviance, and non-thinking response to order and discipline. But I firmly believe that if Ron had carried out the experiment longer, he would have found the beginnings of rebellion. These rebellious acts are also attributes of human nature.

My courses were on "The Nature of Revolution" and "Comparative Governments." The general ideas came from a journal article written in the early Sixties and has since evolved into a major activity. I am enclosing a description of this simulation.

The degree of difficulty experienced by the teacher administering a dictatorship will vary depending on his usual teaching style and set of values. One may also find that Acton was right regarding the corrupting nature of power. This seemed to have caused Ron some anxious moments and well it might. Setting the tone of the completely dehumanized classroom was one of the most difficult aspects of the game, but crucial to its success. Surprisingly and disturbingly enough, the students responded very well. Students seem to want the discipline, and in fact, enjoyed it. As Ron discovered, students felt more secure, and felt a sense of community. The teacher will be caught between laughing aloud at his ridiculous stance, or overacting in his own megalomania. The position between requires a constant self-examination so that the students sense the seriousness of the situation. There is no allowance for student deviation from the rules and until the game has been played for a period of time, vigilance is vital. Punishments, in turn, should be swift and public.

One also has to be aware of side effects, mainly relationships outside the classroom. An incipient paranoia becomes a regular feature in all relationships with these students and in many cases there is good reason. There are times when your feelings of distrust spill over toward faculty members (non-participants according to the rules) who like nothing better than the challenge of playing revolutionary.

It must be made absolutely clear to students that no violence or threat of violence will be tolerated during the playing of the game. This I learned was necessary after playing it for the first time. Ron had no way of knowing the degree of involvement the students would feel and therefore was faced with a potentially dangerous situation. The most effective weapon the revolutionaries have is public disclosure of government informers and the call for social isolation until they have proven their loyalty to the revolutionary organization.

The students and I learned a number of lessons from this experience. Dictatorships are effective if systems of communication are controlled by the central government and all other communication is disrupted. Most students were not willing to take the risks of rebellion until they felt there was enough support to be successful. We were all astounded by the number of informers, and the students who informed were somewhat disturbed by the fact that they, themselves, turned informer. Many justified their actions by saying "we were just playing a game," but I think it left

a question in their minds as to what they would really have done in an actual situation. Another insight culled from this experience was how power affected our behavior. We found that the longer we had it, the easier it became to use and this was particularly true with the students. As the power increased, so did the paranoia. Social relations became strained and only the strongest previous friendships provided security.

One final word – I thank Ron for stimulating me to commit my own experiences to paper. His experience was very traumatic, to the point where he and his students wished to dismiss it. It evolved out of classroom work and took shape on a day-to-day basis. This may be good teaching, but it also has a tendency to get out of control. I think good teachers should take risks and must take risks if the teaching is to be effective. But I also believe that the risks should be minimized and that the experience is valuable enough to repeat. This is mainly the reason that my response is so lengthy. Hopefully other teachers can benefit from what is basically a lesson plan and if there are questions, should feel free to contact me.

Sincerely,

Daniel P. Kunitz
49 Judkins Street
Newtonville, MA 02160

SIMULATION ON REVOLUTION

The Dictator (the teacher) establishes a dictatorship over the country (the classroom) and the students' task is the overthrow of the government. My students were to act as organizers of the masses (students not in my course). A successful revolution was defined as "occupying" my room during a regularly scheduled class with 35 to 50 students without my previous knowledge. If the dictator has advance knowledge of their intent, he may meet them at the classroom door with his theoretical army and eliminate them. Death is defined as out of the game – no longer allowed to participate.

The Dictatorship is composed of several components and exists as soon as a student crosses the threshold into the classroom.

1. Strict Discipline – the following are a set of rules:
a. NO TALKING
b. NO LAUGHING
c. SIT UP STRAIGHT, FEET FLAT ON THE FLOOR
d. RAISE HAND WITH ELBOW ON THE DESK – MUST BE IMPORTANT
e. ADDRESS BIG BROTHER AS "SIR" OR "MR. KUNITZ"
f. MAY ONLY RISE WITH PERMISSION
g. RISE WHEN TEACHER OR GUEST COMES IN AND WAIT FOR PERMISSION TO SIT
h. WHEN NOT WORKING, HANDS WILL REMAIN FOLDED ON TOP OF THE DESK
i. NO POLITICAL DISCUSSIONS OF MY GOVERNMENT WILL BE TOLERATED AND WILL BE VIEWED AS A THREAT TO MY POWER

j. NO CONGREGATING WITH ANY MORE THAN TWO OTHER PEOPLE OUTSIDE THE CLASS – IF DONE, THIS WILL BE CONSIDERED SUBVERSIVE AND SUBJECT TO EXTREME PENALTY

k. NO WRITTEN COMMUNICATIONS WILL BE TOLERATED AS THESE WILL BE CONSIDERED SUBVERSIVE. THIS INCLUDES NOTES, NEWSPAPERS OR ANY WRITTEN MATERIAL.

REMEMBER, BIG BROTHER IS WATCHING YOU!

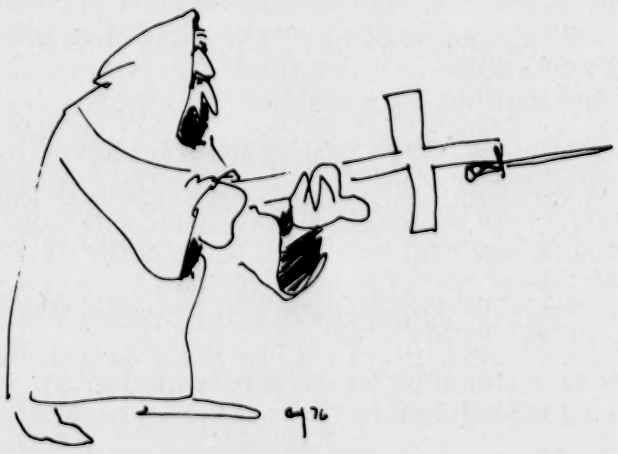
2. Severe Punishment – Infractions of rules require punishments which vary according to degree of seriousness of offense. These may include standing a full period, outlining the Sunday metropolitan newspaper, etc. Death is the ultimate punishment and eliminates the student from further participation. This must be fully understood and strictly adhered to. Elimination is reserved for people who are blatant revolutionaries – but remember the dictator's power is arbitrary and often the innocent will perish. Sometimes a gross injustice may be necessary to create a martyr. (See "Public Trials.")

3. Spy System – Different systems of spy networks are possible and even the use of no official spies is effective. I have found that informers are plentiful, especially if the rewards are highly valued.

4. Reward System – From past experience, I have found that grades are the most realistic weapons for punishment and reward. This is somewhat sensitive for parents and may require a letter home which indicates that grading in this simulation is only part of the total grade for the course. In fact, at the completion of the game, I grade the students only on participation and academic work. I explain this to the students and they generally recognize the original need to use grades as reward and punishment as necessary to the nature of the game. During the course of the game automatic A's are given for loyalty and F's for being caught as a revolutionary. If the Dictator remains in power over the established time period (three weeks in our case) then loyal followers receive A's. Executed Revolutionaries receive automatic F's. Non-committal participants can receive C's or A's. This will vary from student to student. A successful revolution will be rewarded with A's to the Revolutionaries and automatic F's to the Dictator's administration.

5. Administrators – It is in the interest of the Dictator to choose two to three students who will assist him. The class agreed that these administrators could not rebel because there was no history to sift out loyalties and characters. Therefore we created instant loyalty. These people are essential for keeping in close contact with other students and may be heads of your secret police. They are publicly announced at the beginning of the game. These students should understand the kind of social pressures to which they will be subjected and should be quite stable and secure.

6. Public Trials – One interesting activity which not only will eliminate the potential or active revolutionary, but will also provide the students with the issue of gross injustice and the arbitrary power of a dictator is the pre-arranged public trial. After picking your "victim," assign the task of prosecuting attorney to his best friend and strongly suggest that it would be in his best interest to win the case. Choose another popular student, in the interests of justice, as a defense attorney with the suggestion that it would be in his best interest to lose the case. Then find four or five witnesses and instruct them on their testimony, making sure that both attorneys are aware of this and use the information effectively. My jury was "randomly" picked and allowed to vote guilty or not, anonymously. The outcome was as expected and all did their respective tasks well. Execution was immediate! This has the added value of providing a "martyr" which helps to foment revolution.



7. A Note on Academics – During the period of playing the game, the students studied the nature of history, the use of footnotes, notetaking and how to construct a bibliography. These were to be used in their papers on particular revolutions. In addition, they were to read biographies of revolutionaries, hopefully related to the specific revolution under study. In the past, the students had studied the structure of government and different systems of government. The students also read books such as **Brave New World**, **1984**, and **Animal Farm**. This project made use of reading, research and the ability to present ideas verbally.

The Dictator (Big Brother) must be allowed one week to establish his government, his spy system and the kind of discipline needed to run the organization. Revolutionaries can be active during this period but the actual overthrow may only take place after the one week's time. Beware of the first class meeting after that first week!

Welcome regimentation

As a teacher myself, I set up a slightly similar "experiment" once in the fourth grade. We were discussing discipline in general, however, and not Nazi Germany. For 15 min. we were strictly regimented with many of the same rules that Jones mentions. I too was puzzled by the numerous pleas for it to be that way always. The next 15 min. they did what *they* wanted while I *tried* to teach. Two or three students wandered aimlessly trying to "let go," but returned to me and listened intently to my lesson. The rest of the class went berserk (nothing really harmful), and most wound up on the playground. One girl explained later how she gets so tired of being good all the time, and has terrible urges to be bad sometimes, and how happy she was that I let her be "bad" that day. A good Bad. Needless to say, the administration didn't think so. How Ron Jones managed to go as far as he did, I'll never know, but thank god he was able, without interference, to finish it. Beautiful. I thank him for finally sharing it.

Sharon Watson
Sweet, Idaho

The "hex death" classroom

The following is excerpted from the discussion of a paper on hex death by Joan Halifax-Grof, appearing in the current **Parapsychology and Anthropology.**

Brier: . . . I used to teach a course called "Parapsychology of the Occult," in which I dealt for a third of the term on witchcraft and covered in some detail hex death. I had one student in the class – these classes very often bring together a bunch of these people who believe or claim many things – who claimed he had the ability to perform hex deaths. For his term paper, he rather wanted to prove his ability, and what we agreed upon was this: Now we couldn't have him try to kill just anyone – that wouldn't be fair or nice, right? So we agreed that he would attempt by hex death to kill me. The way we worked it out was, I left a sealed envelope with the registrar on which I wrote: "Open this upon my death if it occurs within the next year." Inside, a note said that the student should be given an "A" for the course. The student and I agreed that if I didn't die, I would give him an "F" for the course. He has since gotten an "F" for the course. But I think it is possible to experimentally test these hypotheses. I think there are a lot of people around who would be willing to be targets for people who claim they can perform hex deaths, myself included, and then we can test it.

Halifax-Grof: I appreciate very much your courage or foolishness, Mr. Brier. I'm not sure which it is.

Winning

BY RON JONES

Every basektball coach hopes to encounter a "benny" somewhere in their coaching career. A benny is one of those special kids that come along once in a lifetime. A kid that won't leave the gym until you've turned out the lights and locked the door. And after it's locked will have fourteen ways and nine friends ready to re-enter. They possess all the natural skills and instincts of a great player. A desire to work hard perfecting the most elementary moves. And work even harder to help their teammates experience success. Perhaps that's the invisible quality that makes a benny. The unselfish willingness to share the art of basketball with anyone that cares to listen or participate in the game. Whatever that spirit is, it's the quality each coach looks for. It's the thing to build around and learn from. It's a winning season and perhaps a lot more.

At Cubberly High School in Palo Alto, where I was basketball coach, the presence of a benny was extremely unlikely. The students at Cubberly were white middle-class children of professionally oriented parents. For the most part, these kids mirrored their parents. They were striving to become successful at something; what that something might be was never made clear. Without an objective in mind, the striving became all important. At Cubberly it meant getting in "advanced ability" groups, getting good grades, getting accepted into a good university. Getting ahead. Getting through school. Getting. There was little time for intensity or giving to any one thing, especially a sport.

By a strange series of events it turned out I was wrong about ever finding a benny at Cubberly. It started when school integration came to Palo Alto. Black students volunteered to be bused across the freeway tracks. Cubberly High School as "host" school received its allotment of twenty-three "guest" students. As the basketball coach I waited anxiously to see if any athletes might be a part of this transfer. Of course I was looking for a benny. Three days after the transfer students arrived I called the first basketball practice.

The turnout was excellent. Our basketball program had been successful during the past few years and it gradually became known that if you turned out, you would get a chance to play. The prospect of gaining some new players from Ravenswood High School in East Palo Alto added to the tension and excitement of the first practice.

As the players came out on the floor for the first time I noted some familiar kids that had started on last year's team. In fluid movement they began the slow and graceful art of shooting their favorite shot. Dribbling a few steps and rearing up to take another shot. Rebounding and passing out to a fellow player. Reliving past plays. Moving to the fantasy of future game-winning shots. Eyeing the new players.

At the baskets on each side of the central court the new players are assembled. They dribble the available basketballs in place and watch the players moving on the center court. They don't talk much and look a little frightened. Then as if on cue they begin to turn and shoot at the available baskets. They too have a private shot and a move to the basket. Soon the entire gym is alive with players outwitting invisible foes and arcing up game-winning shots. Another season is beginning.

Midway into this first practice Cubberly High School basketball met Huey Williams. He came rushing into the gym. In fact he ran around the entire court three times. He didn't have a basketball. He was just running. And smiling. Nodding his head to the dumbstruck players. He didn't speak a word. Just smiled and nodded hello. By his third lap, everyone knew we had our first black athlete.

Huey Williams wasn't exactly the transfer student coaches dream about. He was short, about the shortest player on the club. With stocky frame and bowed legs and radar like hair, he seemed like a bottle of soda water, always about to pop. His shots were explosions of energy that pushed the ball like a pellet. When he ran, he couldn't stop. He'd race in for a layup and instead of gathering his momentum and softly placing the ball against the backboard, he raced

Another High School Confidential story from Ron Jones, whose "Take As Directed" was the strongest item in the Spring '76 CQ *(he ran his class like a Nazi Youth cell as an experiment, and the kids loved it so much they didn't want to stop). Most people think he's making these stories up; this one is illustrated with photos of his "B" basketball team from the 1969 yearbook of Cubberly High, Palo Alto, California.*

—SB

TOP ROW: S. Lee, J. Scholer, D. Warnock, P. Traynor, P. Keplinger, G. Morton, S. Chenn, B. Stanovic. **BOTTOM ROW:** J. Mottsmith, T. Trish, H. Williams, K. Flattely, R. Buckley, T. McCrea.

The 1969 Cubberly High "B" team. Centerpiece, Huey Williams. Chris Martin is absent posing with the varsity. The "D. Warnock" is Doug, brother of Dave, who died in midseason.

straight ahead, full speed, ejecting the ball in midair flight like a plane letting go a rocket. The ball usually slammed against the backboard or rim and careened across the gym. To say it simply, Huey was not a basketball player. He was something else.

Every player carries to the game a personality. That's part of what makes basketball so interesting. That personality is directly reflected in the way a person plays. Now, Huey brought with him a personality I had never quite seen before. He loved life, people, school, anything and everything. "Mr. Jones, how are you today?" he'd say. "Fine I hope." You would have to agree with Huey. His view of the world was contagious. He always had a smile that burst out when you least expected. "Mr. Jones, I didn't shoot too well did I?" He'd be smiling, getting ready to shoot again.

As the first black player on our team, Huey was well received. After all he didn't represent a threat to any of the white players. If anything he was a puzzlement. How could anyone try so hard, smile so much, and play so bad? Weren't all blacks supposed to be super athletes? How come he doesn't know his place, isn't solemn, and I like him? You couldn't help but root for Huey and want to be around him. Carnegie and the make-you-feel-good folks could take lessons from Huey. He was a good human being that shared his optimism about life with anyone that ventured in his path. With a smile Huey started every practice with "We're going to win this whole thing, Mr. Jones. Just watch!"

I didn't share Huey's enthusiasm. It was the most unusual group of kids I had ever coached. In fact the team really constituted three distinct groups. Huey represented one of these groups. This was a collection of five kids who had never played before. They couldn't shoot or dribble, let alone jump. Passing was iffy. When they were on the court my greatest fear was that they might run into each other. Although lacking skill, they personified Huey's faith and willingness to work hard. My God how they tried.

A second group of kids on the team had all played together the past year. They were typical Palo Alto kids. I guess Chris Martin most exemplified the personality of this group. Chris was a class officer, good student, achievement oriented and serious about winning and of course playing. Chris just tolerated Huey and most everything else. His attention was on the future. Basketball at Cubberly was like the Pony League, Little League, and Junior League he had participated in so well. It was one more right step to some mythical big league called Farah, Hilton, or perhaps Standard Oil.

Chris knew all the lessons and skills of basketball. His jump shot was a picturebook example of perfection. He released the ball at the peak of his jump and followed through with his hands guiding the path of the ball as it slid into the basket. The closest parallel to Chris' behavior might be described as that of a little old man. He was "finicky" at the age of sixteen. If things weren't just right, his voice would stretch

several octaves and literally squeak. For Chris things going just right meant a championship and of course a star role. I liked and felt sorry for Chris all at the same time. He reminded me of myself. A little selfish and awfully conceited. Extremely insulated from feelings.

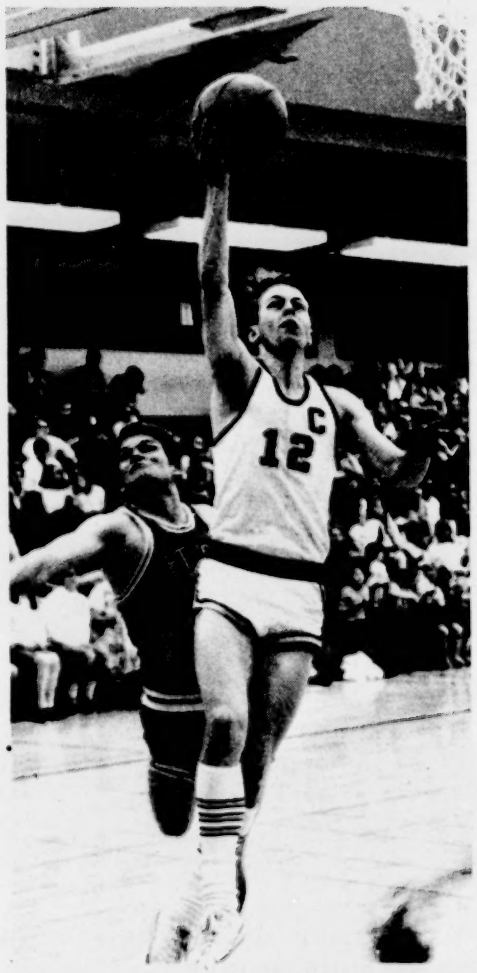
A third group of kids making up the team can best be described as outlaws. Dave Warnock characterized this group. Whereas Huey had a reverence for life and Chris was busy controlling life, Dave seemed always on guard and challenging hell out of it. He was always in trouble. Usually a team is composed of kids like Huey who can't play and kids like Chris who have played throughout childhood. Kids like Dave rarely show up on a team. To have five kids like him on the same team was most unusual. If not intolerable.

Dave's style of life and play was outside prediction. Dave reminded me of a stork trying to play basketball. His arms and legs flayed at the air as he stormed up and down the court. His shots were what players call "watch shots." He would crank up the ball without facing the basket from some unexpected place and yes it would go right in. Prompting the defensive player to say, "Look in the other hand . . . you might find a watch." Dave was always a surprise. A surprise if he showed up for practice and a surprise that he stayed with it. In a strange way he was also a breath of fresh air. He lived to the fullest. He didn't stop to explain his actions. He just acted.

So there you have it. Not exactly a dream team. Five kids charging around looking for the pass they just dropped. Five kids straining for an expected championship. And five kids who might not even show up for the game. The entire team tilted on the verge of combustion. The kids that centered around Chris and Dave openly hated each other. Huey and his troop of warriors became the grease that kept the team moving together. Happy and delighted to be playing they were oblivious to the conflict. In their constant attempt to mimic a Warnock pass or a Chris jump shot they inevitably made the originals look ridiculous. Huey with his intensity and honesty put everything in perspective. It was simply impossible to get angry or serious about yourself with Huey around. He had girlfriends to tell you about, a cheer for a good play, a hand for someone who had fallen, and a smile for everything. And if all that failed, he always had his "new shot" to show you.

It wasn't long before everyone was working to help Huey and the other inexperienced players. Chris was telling players about the right way to shoot. Dave was displaying one of his new trick passes. I was working hard to teach defense. If you don't have the ball, go get it. Don't wait for someone to put it through the basket or even start a play. Go get the ball. Chase it. Surround it. Take it.

We worked on how to press and trap a player with the ball. How to contest the inbound pass. Double team. Use the full court. Cut off the passing lane. Work together with teammates to break over screens



Chris Martin, head of "The A-train."

and sag into a help position. Work to keep midpoint vision. Block out. Experience the feeling of achievement without having the ball or scoring the winning point. Taking pride in defense.

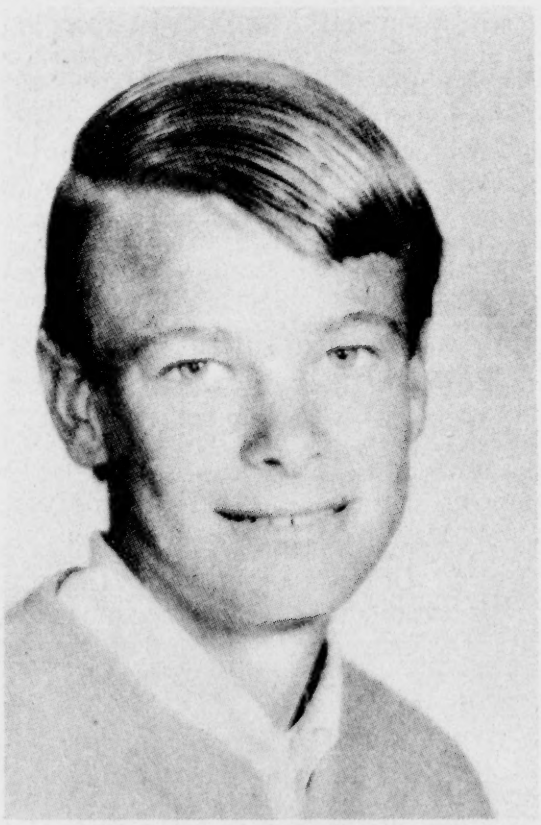
The intensity and intricate working of defense was something everyone on the team could do, and something new for everyone to learn. Defense is something most basketball teams just do not concentrate on. It's the unseen part of the game. Working hard on the techniques of team defense began to slowly draw the team together with a common experience. As for offense, well, I taught the basic passing pattern, but the shooting was up to whoever was on the court. Chris and his group ran intricate patterns for the layup or percentage shot. Dave with his team took the ball to the hoop usually after three dribbles and a confederate yell. Huey's team did their best just to get the ball up the court.

By the start of the season we had one spectacular defense and three offenses. In fact I divided the team into the three distinct groups. In this way everyone could play. It confused the heck out of opponents. According to basketball etiquette you're supposed to play your best five players. We played our best fifteen. You are also supposed to concentrate on scoring. We emphasized defense. Finally a good team has the mark of consistency. We were the most inconsistent team you could imagine.

We would start each game with Huey's bunch. They called themselves "the Reverends." With their tenacity for losing the ball and swarming after it plus their complete inability to shoot, they immobilized their

opponents. The starting fives they encountered couldn't believe the intensity and madcaps of Huey's Reverends. By the time they realized they were playing against all heart and very little scoring potential it was time to send in Chris' group. Chris' team called themselves the "A Train." That they were. Like a train they methodically moved down the floor, executed a series of crisp passes, and scored. By this time in the game Huey was smiling his all-knowing smile, and the coach from the other team was usually looking over at our bench in a state of confusion. Just as the other team adjusted to systematic and disciplined play, we sent in Dave's "G Strings." Dave's team played with reckless abandon. They were always in places they weren't supposed to be. Doing things that weren't in the book. Playing their game.

By the middle of the season we were undefeated. Oh, I had to suspend Dave twice for smoking a cigar in the locker room, once for smuggling a girl onto the travel bus. And on occasion I had to remind Chris that I was the coach, not him. But all in all the team was actually becoming friends. It was a joy to witness this chemistry. Huey's group gradually improved. They started believing they could beat anyone. The basketball still didn't go in the basket, but in their minds and actions they were "starters." As for Chris, he was actually beginning to yell for someone besides himself. And Dave, well he didn't change much in an outward way. He was still frantic on the basketball court. It was off the court that he was becoming a little less defensive. He started telling me of things he wanted in life. Things not that much different than those securities and accomplishments sought by others. In fact it was something as simple as friendship.



Dave Warnock, head of "The G-strings."
1951 - 1968

Our first defeat of the year came not on the basketball court but at the hands of the school superintendent. With twelve games already played, the superintendent declared that all transfer students were ineligible for interscholastic sports. It was a knee-jerk reaction to other coaches in the league who feared we might "raid" Ravenswood High School of its top black athletes. No one worried about us stealing away their intelligent students or class leaders, yet that's just what we did. No one thought to ask the students and parents about how they felt. This was a coaches' decision. Coaches who thought only about winning.

The superintendent ordered Huey off the team immediately. The announcement of this decision came not in a telephone call or personal visit, but in a ten word directive. "No transfer students will be eligible for interscholastic athletic teams."

The announcement came on a game day. The team was already suited up waiting for the last minute game plan. I read the superintendent's decision to the team. They were stunned. And angry. Ideas and plots for Huey's survival rang out against the white-tiled dressing room walls. Dave slammed his shoe against a locker, "It's a shitty decision." Chris agreed, "We can appeal . . . let's go to the board of education." Dave snapped, "When . . . in three weeks?" Everyone joined the argument. "Let's give Huey a new number." "Yeah, but can we also change his color?" "We can play against ourself . . . can't we." "Let's make up our own league." In the din my own thoughts were welling up. How I hated the way decisions were made at this school.

It happened every day in a hundred ways. The textbook to use, the schedule to follow, the course to teach. At no point in the schooling process were the teacher or student allowed to make a decision and then be responsible for it. Every day I and those around me were being robbed of the chance to make decisions. It was like a draining away of life itself. Life must be tended daily. It can't be simply studied. Or mandated. Like basketball it must be played the best way you know how. What do we teach when all we do is hand down and follow directives?

My thoughts were obviously slipping out of my mouth. I didn't know when I started verbalizing my feelings, but I became aware of it as my whispers all of a sudden were audible in the now silent locker room. As my personal decision became clearer so did my pronouncement of it. "Huey's dismissal is wrong. It's unfair to defer the decision or obey it. I think we should forfeit all our remaining games. Huey is a part of this team. If you are willing to give other teams an automatic win over us in exchange for having Huey play . . . raise your hand." Fifteen players leaped to their feet. Dave was yelling, "Well, all right then, we've got a game to play!" It was unanimous.

The players streamed onto the floor to begin their warm up. I could hear a few rebel yells and even that high pitched squeak of Chris'. Huey still brought

gasps of surprise with his high velocity layup. When he did his latest new shot, a sweeping, running hook, the assembled fans roared approval. Huey grinned and promised more. As the players finished their warmup, the school principal came by to remind me of the superintendent's decision. "Ron," he said, "I'm sorry about Huey, but he hasn't scored many points for you has he?" "No," I replied, "Huey hasn't scored a point." "Things will be different next year," he confided. I agreed.

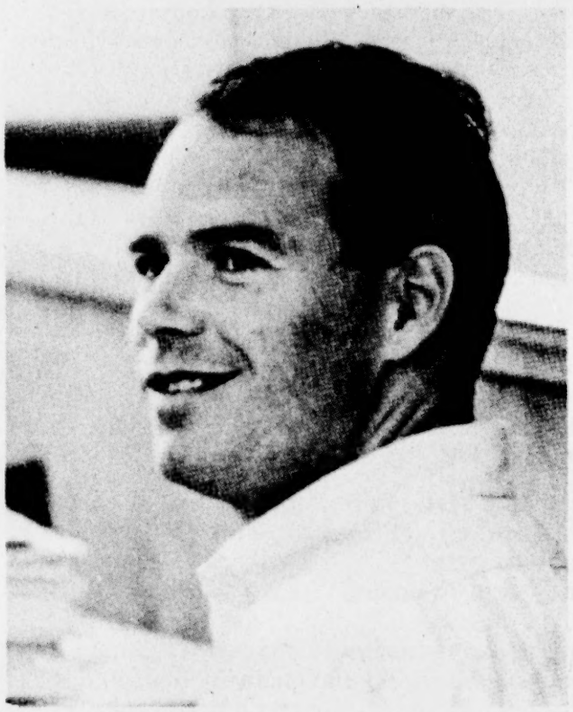
As the game was about to start the team huddled for final instructions. "Any after-thoughts?" I asked. "There is still time." We were all bundled together in a knot. Hands thrust together in a tight clasp. Everyone looked up. Eyes all met. Every single kid was smiling. My God, I've got fifteen Hueys.

The horn sounded calling for the game to start. I took the entire team to the scoring desk and informed the league official. "We formally forfeit this game." The opposing coach from Gunn High School rushed over to see what the commotion was about. "What are you doing?" he asked. I told him of our decision. "That doesn't make sense. You guys are undefeated," he stammered. "We let two of our players go today." "It's our decision," I explained. "We're here to play basketball, all of us."

And we did. All of us. Huey did his patented dash, Chris his jump shot while Dave relied on surprise. It was a combination hard to beat. We poured in twenty more points than Gunn and, more importantly, displayed a constant hustle. Players ran to shoot free throws. Ran to take a place in the game. Ran off the floor on being replaced. It reminded me of that first practice with this strange kid running around the gym. Perhaps we had learned more from Huey than we taught. At the close of the game the Gunn coach stopped to comment, "Congratulations, you've got quite a team there." I reminded him that we had forfeitted the game, that his team had won. He turned, "No, your kids won. They're a bunch of bennys."

Dave Warnock was dead. Chris brought the message to me. His father was a school official and he heard of the news from the police. Dave had been at a party and suffocated inhaling hair spray. Like a tape recorder erasing its content I couldn't think or act. Then in forced flashes I began to retread the past days. Searching for glimpses of Dave. His face. His antics. Was there something there? A warning? A plea? What did I miss?

The school community for the most part remained ignorant of Dave's death and its self-destructive cause. There were faculty murmurs, "That crazy kid." Other than side glances at what had happened there was no marking of Dave's death. Drugs and death are not part of the curriculum. It was improper to alarm parents. The school didn't stop its parade. Even for a moment of respect or some such other platitude. Nothing. Everything as usual. Including basketball.



Ron Jones, coach and history teacher.

The team gathered for practice out of habit. The season actually had only a few days left. It had been a corrugated course. Our protest to allow Huey the right to play had sparked a boycott of all team sports. The boycott led to a change in the rules allowing transfer students to play with the condition that "due to the disruptions" no league championship would be awarded. It was ok with us. We declared ourselves champions. Actually it was Dave's idea. Oh shit, it didn't seem fair. Dave was a storm. He kicked and dared the world. And lost. Or did he? I don't know.

One good thing about sports is that you can lose yourself in physical exertion. Push yourself into fatigue. Let the body take over the crying in the brain. I informed the team that this would be our last practice. We would have a game, full court scrimmage.

It was then that I realized Dave wasn't there. It's funny, Dave was dead yet I expected him to come prancing into the gym, the final trick on death itself.

Being short one player I joined in the scrimmage. First Chris' bunch against Huey's team and then Dave's group to play Chris'. I stood in for Dave. The play was strangely conservative and sluggish. Perhaps this measured play was in deference to Dave. Were we all letting our thoughts wander? Just doing mechanical steps? Or was it a subconscious statement that Dave's life was errant and not to be emulated? Whatever, the play moved from one end of the gym to the other like the arm of a ticking clock. Up and down the floor.

It was Chris that broke the rhythm and silence. Without warning he sliced across the floor, stole a pass, dribbled the length of the court and slam dunked. Then in an unexpected leap he stole the inbound pass. Taking the ball in one hand he pivoted up a

crazy sweeping hook shot. It was a "watch shot" if I'd ever seen one. Out of the blue as the ball cut through the net Chris erupted with a shrill gutteral yell that pierced the stillness. It was a signal. The game tempo picked up, and became frantic. Everyone pushed to their maximum. Straining for that extra effort. Hawking the ball. Diving for a loose ball. Blowing tension. Playing with relaxed abandon.

It felt wonderful. The game was fierce. Everything learned in years of play was used. New moves were tried. I crashed for a rebound, dived, elbows flying after a loose ball and got it. Sprinted full tilt on a fast break. Yelled full voice as I fed Huey with a behind-the-back pass that he laid up for two. Everyone is moving as if driven by some accelerating spell of power and will. Everything goes in. We can play forever. Play Forever.

The scrimmage raged on. The afternoon became evening and still we played. The gym glowed in the yellow light, warm and wet. We were racing now back and forth. Exploding for shots. Playing the toughest defense. Jumping over a screen. Blocking out. Back for one more sensation of excellence.

My chest heaved for relief. Body throbbed. I couldn't stop playing. And didn't want to. Didn't Want To. Down the court. Set up. That's it. Feed the cutter. Fantastic. Now the defense. Keep low. Fuck no. Take it away. That's it. Steal the god damn ball. Now go. Fly.

In a heap I collapsed. Legs simply buckled. I was shaking. Head not able to move. In slow motion the team centered around my crumpled form. I'm all right. The air is rushing back into an empty body. Giving life and movement. "I'm all right." Everyone is breathing hard, pushing out air and taking it back in. Grabbing their knees and doubling over. Letting the body know it can rest.

Without any words everyone gathered themselves, then silently headed for the locker room and home. It's over. The scrimmage was ended. Practice finished. The season complete.

I slowly shower and dress, waiting for the locker room to empty. Walking through the silenced place I stop to look and say goodbye. There is Chris' locker. A good kid. Hope his life goes well. He has changed and matured. Been a part of other lives. Huey's locker is still open. God, even his locker has a smile. What a person. I'll never forget. Dave's place. The cigar smoke is missing and so is Dave. I hate you for leaving us. I love you.

I push up a twenty-five foot jump shot that is five feet beyond my range. It goes in. Rush to chase the ball. Try again. Seek the magnificent feeling of doing the undone. The unplanned. The unexpected.

There is a sign that hangs over the exit from the locker room. It reads, "There is No Substitute For Winning." Someone scratched out the word winning and replaced it. "There Is No Substitute For Madness." ■

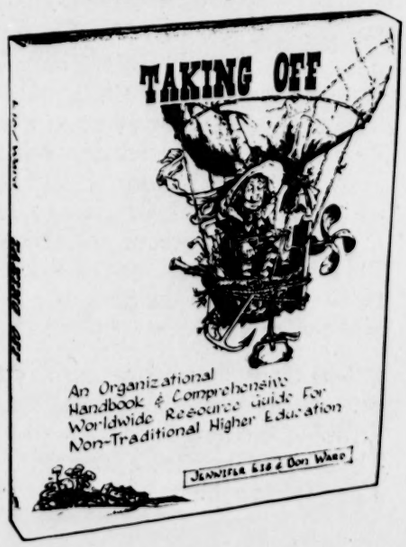
Taking Off

This is a book about finding non-university means of education and helping to realize the "be what you want to be" part of the American dream. The book has two divisions. The first being a journal of, and how to develop a center for extra academic learning. If read carefully, it is possible to articulate vague desires about personal futures into a specific area.

The second half is a 200 page compendium of addresses and descriptions of organizations, associations, specialized schools and international study groups which provides an access for realizing those desires. Areas covered in the listing are mainly skills associated with arts and humanistic service. It is extensively cross-indexed.

—Bruce Umbarger

Taking Off
Jennifer Eis and
Don Ward
1975; 393pp.
$5.00 postpaid
from:
C/AHED
1118 S. Harrison Rd.
E. Lansing, MI 48823


TAKING OFF
An Organizational Handbook & Comprehensive Guide For Worldwide Resource Non-Traditional Higher Education
Jennifer Eis & Don Ward

If we don't change direction, we are likely to end up where we are headed.

•

GYMNASTIKHØJSKOLEN
i Ollerup
Denmark

(1920) Academy of Physical Education. Emphasizes basic principles of Danish physical education. Includes gymnastics, swimming, sports, track and field, athletic theory, teacher training and anatomy. Danish language, culture, dramatics and music are optional. International course for teachers, youth leaders and college students offered summers. Open to anyone 18 years or older.

•

BIG CREEK POTTERY
Davenport, CA 95017

Classes and instruction in throwing, clay processing, glazing, firing of kilns and kiln construction. Fee includes all costs — living/learning. Experience not required. Three sessions, spring, summer and fall.

•

AMERICAN COLLEGE OF NURSE-MIDWIVES
1000 Vermont Avenue, N.W., Suite 500
Washington, D.C. 20005

Professional organization that certifies training programs and nurse-midwives. Provides information and listings of schools offering midwifery programs.

•

AMNESTY INTERNATIONAL OF THE U.S.A.
200 72nd Street
New York, NY 10023

(1961) Active in 31 countries. Objective is to secure international observance of the Universal Declaration of Human Rights by working for the release of Prisoners of Conscience; opposing the death penalty, torture and inhuman treatment of prisoners. Concentrates efforts on liaison, publicity work and publication of *Amnesty Action*, a monthly newsletter. Relies on volunteer help and college interns.

The Education of Joni Mitchell

Stewart Brand: Where'd you go to grade school?

Joni Mitchell: I went to different schools in Saskatchewan, all along one highway. Then high school in Saskatoon, Saskatchewan.

SB: Was much education happening for you there, or was it just a holding tank?

Joni: I was fortunate in the public school system to have one radical teacher. He was an Australian and a handsome spirited man and a reverer of spirit. The year before he taught me he approached me in the hall where I was hanging my drawings for a parents' day. He criticized my habit of copying pictures. No one else did. They praised me as a prodigy for my technique. "You like to paint?" he asked. I nodded. "If you can paint with a brush you can paint with words." He drew out my poetry. He was a great disciplinarian in his own punk style. We loved him. He was more of a social worker or a renegade priest. I wrote an epic poem in class – I labored to impress him. I got it back circled in red with "cliche, cliche." "White as newly fallen snow" – "cliche"; "high upon a silver shadowed hill" – "cliche." At the bottom he said, "Write about what you know, it's more interesting."

I think at that time there was very good academic opportunity. However, I was only interested in art – painting and music and things which weren't supplied by the school system until a later time. I went back to my high school last summer and found it to be extremely progressive – theatre in the round, advanced study rooms with provision for video tape, individual music practice rooms, a fairly advanced musical school, two classes devoted to fine arts.

When I was there it was an academic school of a very high order. It did attempt to make you do things for yourself, and function in a more adult way, but it was wasted on my particular interests. I must add at this point that this marvellous teacher who extracted the individuality of his pupils created monsters who were almost ungovernable within the rigidity of that system. We nearly drove our next year's teacher nuts!

SB: If they had had the art stuff then that they have now, do you think that would have made a difference?

Joni: I'm not really sure if it would have or not. I mean the pattern that it produced in me was independent thinking, I have no regrets definitely in retrospect. I do know that some of my art education has been something that I've had to undo. It's been a long time coming for me to find myself as a painter because I was educated badly in that area.

SB: Badly means what?

Joni: Badly means being taught to copy things rather than to use my own imagination. And not to copy masterpieces, even, but the covers of magazines and postcards. Bad education in a small town, not progressive enough. They didn't know what to do with a creative child in that environment.

Jerry Brown, Governor of California, got us into this one. Last Fall he wanted to help Immaculate Heart College in Los Angeles through their financial crisis and agreed to participate in a benefit for them. His idea of what might be interesting was a public debate on education. At this point he called me to Sacramento for consultation. I suggested that the debate be three-way, that Bill Graham produce it, and that we have a musician.

"Joni Mitchell," said Governor Brown.

(The debators were to be Brown, William F. Buckley, Jr. and Ivan Illich – Illich wouldn't debate publicly and was replaced by Clark Kerr. At the last minute Joni Mitchell cancelled her appearance so she could be with Bob Dylan and The Rolling Thunder Revue at their Madison Square Garden finale – which explains why Brown said in his Playboy *interview, "Bob Dylan is a man with power." Our debate, called "Education and Wisdom," substituted James Taylor for Joni Mitchell and was rather a flop at the Hollywood Palladium.)*

In the course of preparing a snazzy program brochure for the $50-a-seat debate, I phoned all of the participants for accounts of their educations. This is Joni's, with details added later. I think it's more interesting than anything that was said at the debate. Artists are educated, but never through a curriculum.

–SB

Class of 1960

SB: Was the art you were doing mostly painting and that sort of thing or were you doing music by then?

Joni: No, I wasn't into music. It's interesting, I wanted to play the piano but I didn't want to take lessons. I wanted to do what I do now, which is to lay my hand on it and to memorize what comes off of it and to create with it. But my music teacher told me I played by ear which was a sin, you know, and that I would never be able to read these pieces because I memorized things. So again there was a misunderstanding. In my drive to play the piano I didn't fall into the norm for that system, so I dropped that. And I finally dropped my art lessons too through a similar disillusionment. I belonged to an extracurricular writers' club in my school, although I was a bad English student because I was good in composition, but I wasn't good in the dissection of English, you know. So even in a subject which I later enjoyed, I wasn't scholastically good in it because I didn't like to break it down and analyze it in that manner, and I liked to speak in slang.

I failed the twelfth grade, finally. It just caught up to me that I would cram at the end of the year and then I would go into the new year with not enough knowledge to continue to build on that subject. So finally in the 12th grade I ended up repeating a couple of subjects and at the end of that year I went to art college where I became an honor student for the first time in my life. And I found that I was an honor student at art school for the same reason that I was a bad student – an equal and opposite reason – because I had developed a lot of technical ability. I was already aware of tonality and light source, and a lot of things that were taught in the first year. As a result I found that I seemed to be marked for my technical ability so that in free classes where I was really uninspired, my marks remained the same standard. Whereas people who were great in free class, who were original and loose who didn't have the chops in a technical class, would receive a mark that was pretty similar to their technical ability. So I became pretty disillusioned with art college, even though I enjoyed being near the head of my class for the first time in my life.

SB: What was the name of the college?

Joni: Alberta College of Art, situated at a technical institution in Calgary, Alberta.

SB: You were there how long?

Joni: One year. And the first year was like a time to decide whether you wanted to be a commercial artist or fine artist. They were going to decide what your fate would be. So I quit there and went to Toronto to become a musician. In that town there were about 18 clubs supporting singers, so I went up to see if I could get work. This was in '61.

Well, in Toronto there was a very strict union. It cost $160 to get into the union. If you weren't in the union, you couldn't play. So I had to take a job in a clothing store which paid $36-something a week, you know, the minimum wages at that time, out of which a very high rental had to be paid, black dresses for the department I was working in had to be paid, and I could never get ahead to get in the union. And I couldn't write home, because my parents were pissed off at me because I didn't go finish out my art college.

SB: You were what about now – 18?

Joni: No, I was 20 at this point. Anyway. I finally found a non-union club in the city that took a chance on me that I worked at for a while. So I made a little money.

SB: Did you ever get in a Canadian union?

Joni: I finally did, yes. I finally got enough money saved up. And then I came to the States and gradually began performing around the country.

SB: Have you done any schooling since then?

Joni: No, but I've learned a tremendous amount from personal encounters. I continue to paint. I continue my work as a fine artist and a commercial artist.

SB: I wonder where that distinction comes anymore.

Joni: Well, I still feel there is a distinction. You've got to remember that at that time, for modern abstractionism there was no real commercial vent. That was what the fine arts were. You didn't see too many Christmas cards, album covers, car ads, or anything like that which incorporated that aspect of painting.

SB: Maybe the distinction is: a commercial artist is any artist whose audience is anybody besides personal friends.

Joni: I think that's about it. The fine artist decides that there are only about 13 people in the world who understand him and resigns himself to it. I don't get much from most contemporary art. I find it too noncommunicative.

SB: You're still doing some of that sort?

Elsa Dorfmann

Joni Mitchell on the Rolling Thunder Revue

Dorfmann

Joni: I'm still experimenting with very personal painting as well as more commercial illustration of my own album jackets and things. I haven't taken any formal training but I have discovered my own educational system. I know how I learn best and I know how I learn most rapidly and how to feed myself information for my particular kind of growth, so I'm out of this a self-educator, but people do feed into me. I'm aware of sources of growth, people who have laid short cuts on me. I can mark the days of those encounters as points of departure. So I'm continuously in school. I do read some, though I seldom finish a book. I read it till I come to a point of inspiration and then work from that point into my own work.

SB: Do you ever look for more in the same book?

Joni: Some books I do. Rather than overload myself with fact – like in the school system where they gave you so much information that at best all you could do was regurgitate – I've found that at certain points in a book I would say, "Oh, that's interesting," and I would want to spend some time to develop it or pursue it. I'm interested in the relativity of one thing to another. That's a thing that I do continually, collect information and seek what may seem to be strange correlations. For instance, I know a great studio guitarist, Larry Carlton, whose linear aesthetic tends to arc and splash – Dolphins, I used to call his lines, until I found out he was a weekend flycast fisherman. I find that I interview people all the time. I feel like I'm more in a state of growth and education at this point of my life than when I was in the school system.

SB: Do you think that's true for most of your contemporaries?

Joni: I can't speak for them.

SB: Do you find yourself hanging out with people who are more in the learning mode or ones who tend to know something that you feel like you can learn from them. They're not mutually exclusive, I realize.

Joni: In my early twenties I met two men who were best friends from childhood – one a sculptor – one a poet. My association with them was catalytic in opening my gifts in two areas. The sculptor, Mort Rosenthal, gave me a very simple exercise which freed my drawing – gave it boldness and energy. He gave me my originality. The poet Leonard Cohen was a mirror to my work and with no verbal instruction he showed me how to plumb the depths of my own experience. It's funny the way information falls in for me, you know. There are people at large . . . I wanted so badly to go and visit Picasso, even on the fan level that people come

to me, even with the possibility that I would be turned away, I wanted desperately to go and see him. Picasso is one of my teachers although I never met the man, I have applied some of his philosophy of painting to my song writing. I don't seek out those things. I'm very fatalistic about the reception of information.

SB: Are there others like that?

Joni: Yes. But they live in books. The Castaneda books are a magnificent synthesis of Eastern and Western philosophies. Through them I have been able to understand and apply (in some areas) the concept of believing and not believing simultaneously. My Christian heritage tends to polarize concepts; faith and God — doubt and the Devil — it creates dualities which in turn create guilt which impedes freedom. Jean Grenier and Camus also are teachers of freedom. I feel closer to Camus since he is more savage — Grenier being somehow to me wise but passive.

SB: Is there anyone you've looked up personally? I should explain partly why I'm curious about this. I've just spent some time with Marlon Brando, and he is very much an adult educating himself by going around hanging out with people whom he admires. He just shows up at their door.

Joni: That's a wonderful way to do it. Warren Beatty also approaches things that way. He calls people that interest him and flies to meet them. Warren and Marlon have that ability — who's going to turn them away from the door? That's why I was hoping Picasso would like my music, and wouldn't turn me away. I wanted to go and play him a song while he painted or something, because I had so much respect for his prolonged creativity. I've chosen books I guess because I lack the chutzpah to just go up and knock at somebody's door.

SB: When kids come around now to see you, wondering what they should be doing about their own education, do you give them any counsel?

Joni: Well, the last time I had contact with a group of kids they had come over here because they had a class in career choice. They live in the valley, and they were all interested in music, but music again in the school was not considered a career and they were being channeled into what they would describe as straight jobs. So they asked me to tell them how I had come to have an outlet for my music, how I had Achieved Success. Well, in talking to them, most of them felt they had to make it like the Beatles — by the time they were 21. They seemed to have a feeling of urgency, they didn't seem to have the patience to develop and hone their craft over a long period of time. They were rushing, which I felt would interfere with their growth in a way — setting their goals too high and too close at hand.

SB: You can tell them if they're famous by the time they're 21, it will turn their brains to hamburger and they'll be sorry.

Joni: I told them, "You should see the Beatles now, at 30, with all of their glory behind them." I said, "Wouldn't you rather come to fruition later on in life, sort of slow and gradual, so you're still working toward something when you're 30?" I said, "I am 30," and I looked them right in the eye, because 30 you know to a kid is that magic number where you begin to fall apart or something.

SB: Middle-aged.

Joni: Right, they can't conceive of it. So anyway, anybody that comes to me, I don't have any stock thing to say, because they all ask different questions. I find one thing: they'll ask a question and they'll get an answer that I feel could be useful to them. I can tell by how they relate to it that it's interesting enough for them to use for themselves. Then instead of taking that one bit of information, they get excited and they get greedy in a way, so that they wind up with more information than they can do anything with.

SB: One handball instructor I know of tells you one thing during the course of an afternoon's workout, and that's all you get.

Joni: That's why I never finish books I think. I get to a point where something hits me so strong that it takes me out of the reading, the non-active activity of intake, and puts me into an output situation, it inspires something, it triggers my work habits, it triggers my . . . at that point I put that book down.

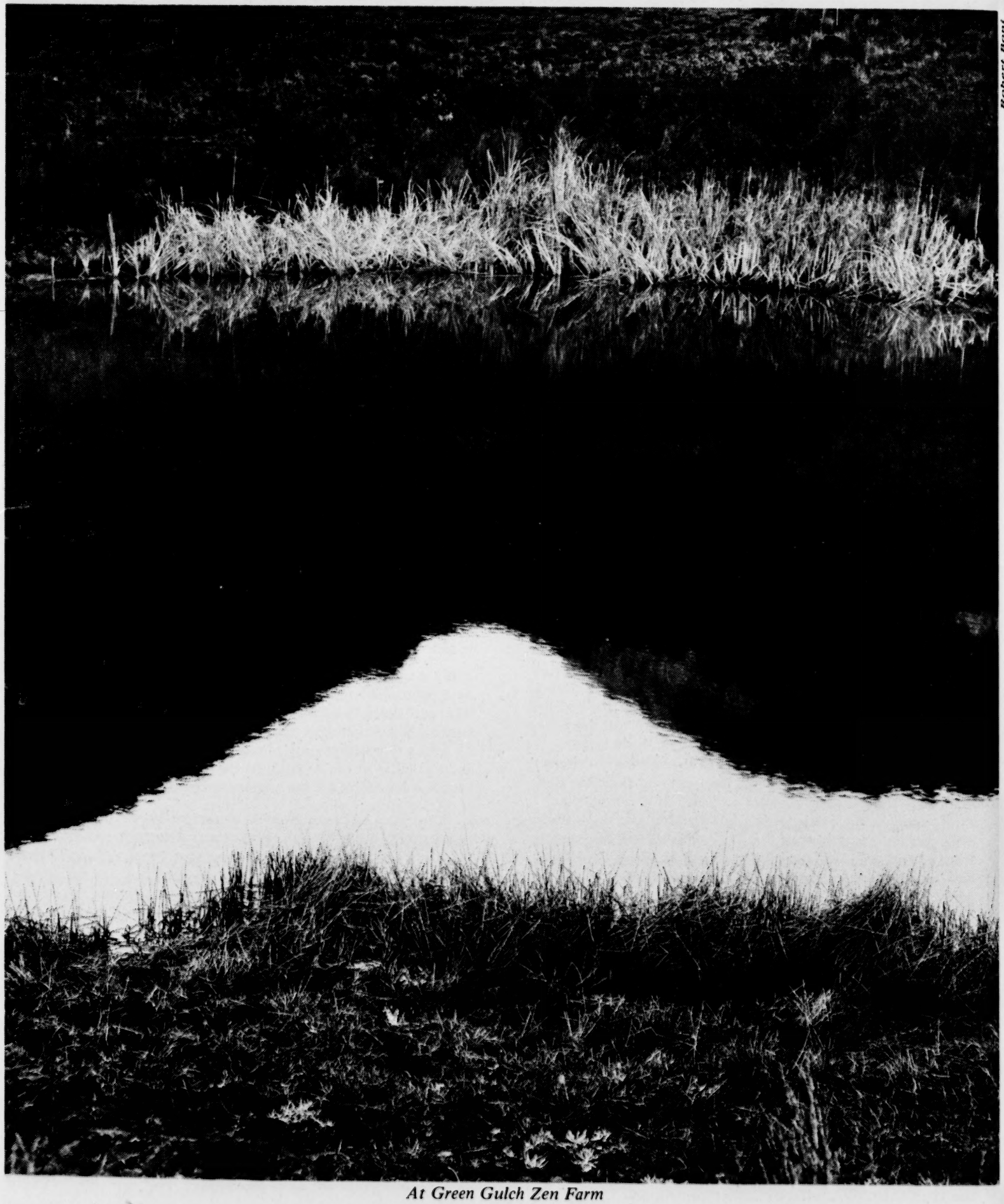
SB: What books have done that for you lately?

Joni: The Boho Dance in Tom Wolfe's book **The Painted Word**. He described the Boho Dance as that period in an artist's existence when he's a Bohemian, when he's established all of his moral justifications for poverty while still striving for success. The second stage is the consummation which he has aimed himself toward, when the public says, "Yes, we like your work, we would like to buy it," and he is celebrated, he finds himself sucked into a social strata which he deplored as a Bohemian. There are different reactions. Picasso went right into it you know and bought himself a Rolls Royce and some little black and white maids, and everybody said, "Look at Picasso, man, he's going to blow it," like he sold out. Jackson Pollock said, "I won't sell out," went to all of these fancy cocktail parties and pissed in the fireplace and did everything just to show he wasn't going to enjoy it. That's the point in that book when I said, "Oh, my God, that is a liberating statement and an understanding to me," and I created a song called "The Boho Dance," taking his title and taking my own experience. I experienced my own understanding of what he was saying so strongly that it almost paralyzed me from reading further. Do you know that feeling? Carlos Castaneda, Rimbaud, Leonard Cohen — they do that for me too.

SB: The only way I can continue is if I can get hold of a pencil and make some mark on the page, turn down the corner, and then I can go on. I've done at least something to acknowledge the hit, and I can come back to it if I need to.

Joni: I am fatalistic about my reading lessons. I was working on a song when I was up in Canada. I had gone up to this lake with John Guerin and we got into a discussion about Genesis and Adam and Eve, and I said let's look up the story. I'd taken two books with me, and there happened to be this Gideon Bible in the cottage, in the dresser drawer. One book I took was a book on the history of modern art from a lot of critics' points of view. They were critical essays on the modern art movement through history, and I was still trying to understand. As I said before, I don't understand this period of modern painting, which is why I was reading Wolfe's book. We were looking for how they had arrived at this, since a lot of it seemed humorous and they wouldn't cop to it being funny. And there was such an elitist attitude.

Well, this other book I had was called **The Disorderly Poet**, which was an explanation of the creative trance, you might call it, taken to different extremes — drug-induced, natural chemical body disorders such as epilepsy, and speaking in tongues. And these three pieces of information were so related. In the art book I came upon a passage about witches and how they had actually been used to further the scientific method, and out of the whole book that's all I recall — that's it in a nutshell, believe me. It was as if the rest of the book wasn't intended for me to discover at that moment. And the information from these three books, in conjunction with one another, was my lesson for the day. And it was completely random, it was, you know, opening the book on page 92 or something. It was almost like the **I Ching**. It was almost like an oracle. But it was the perfect information for that moment. It connected for me in its randomness. So I do feel kind of mystical too about education. I feel that somehow the answers come to you through your inquiry. ■



Robert Bonf

At Green Gulch Zen Farm

It's our very effort to make reality repeatable which Buddhism calls suffering.

PIECE OF A LECTURE BY ZENTATSU BAKER-ROSHI

. . . Many of our Western ideas emphasize our body as something dead, some mechanical thing. We think we can cut chunks of it off and it won't affect us, or that it can be synthesized. And there is a deep interest in living forever – freezing your body in a vault somewhere, or living forever in heaven, some idea like that. And we have this idea in our own perceptions, in that we don't trust our perceptions. For instance, you don't trust just what you hear. Instead you try to correlate and corroborate what you hear with what you see, smell, taste, touch, et cetera. In other words, you try to average your senses. And then there is further averaging over time, some experimental effort over time, which we call science.

So we think, "I saw that a minute ago, but I don't see it now, so it must have been delusion." Or, "I see this now, and it's still there on my desk tomorrow, so it must be real." But if you saw something on your desk one minute, and the next minute you did not, you'd be convinced it wasn't real, wouldn't you?

I'm talking about the fact that you do have the view that reality is repeatable. And it's our very effort to make reality repeatable which Buddhism calls suffering. Suffering means reality is not repeatable. The result of this is we don't trust our senses. We're always trying to correlate one sense's perception with another sense's perception.

But actually, hearing alone can cover everything. Seeing alone can cover everything. Just feeling can cover everything in an immediate perception of truth. Not while you monitor it and review it and correlate it and corroborate it; just an immediate perception of truth that you trust. Which means you cannot create an outside – inside-outside, over here, over there – which is threatening. If you have some outside thing you create which is threatening, you cannot really practice yoga. You cannot trust that stream of vision and sensation which actually is the path.

Buddhism is not a philosophy or practice derived from the mind; it is the mind and body itself, without any image or identity, without any review of it. This is pretty hard to do. If you have an idea of an outside, and an outside which equals danger, then your senses will always be off base. So one of the aids to penetration, to entering Buddha's Way, Buddha's body, is to see everything as your own mind. To understand everything that comes to you as you, as your karma, not as some hostile thing. You no longer see any ill will. You develop an even mind toward everyone, which means you know how you feel, are one with how you feel in each circumstance.

So in this sesshin I would like to emphasize an even mind, an even effort. Not strong effort one period and relaxing the next, but some attempt to have an even, steady awareness throughout sitting and kinhin and meals and work and sleeping.

What we fear in our own consciousness, what we call craziness, often are our perceptions which we cannot correlate with anything else. So the emphasis in zazen is to make you strong enough to sustain them. The problem with craziness is usually not that the perception is wrong, but that we're not strong enough to sustain uncorrelated perceptions.

So by our practice of zazen, without any other aids, you become strong enough to accept anything, giving up any idea, any image of your body, of outside and inside, more and more you just accept what comes to you, accept some hearing completely, without reviewing, without thinking – What is it? What can it be? Could I see it? Could I touch it? What kind of shape does it have? Just hearing.

Your hearing can take you, can open you up to so many things, if you just trust your hearing. What

Doubly torn from context (from the complete lecture and from the week-long meditation period in which it was given) these words of the abbot of San Francisco Zen Center appeared in the summer '75 issue of their publication, **Wind Bell** *(which costs $4/yr from Zen Center Office, 300 Page Street, San Francisco, CA 94102). The Zen Center and* **The CoEvolution Quarterly** *are numerously linked by friendship and collaboration.* –SB

you hear just then is enough. You don't have to average it and see if it's going to occur again. In Buddhism our feeling is, only once we'll hear that. Only once we'll see that. By the time you go get your camera, it's different. By the time you try to base your life on it, it's different.

Not averaging the senses, not thinking that we live in a repeatable universe, means that we don't study a particular thing in order to understand that particular thing. In Buddhism we don't study X in order to understand X and then study Y in order to understand Y and then Z in order to understand Z. We study X in order to understand Y and Z. So another assumption in Buddhism we try out by practice is that each one thing is everything, each one thing includes everything. So if you understand man thoroughly, you will understand woman thoroughly, and if you understand woman thoroughly, you will understand man thoroughly. You don't have to understand first man, and then woman, and then something else.

Sesshin is also to settle down with this kind of idea, to try it, to hold it or live it. To practice Buddhism requires an enormous confidence – confidence in yourself and your teacher and Buddha nature, a sense that you can do it. Without that confidence there is always a danger of a deep division in yourself.

So we practice many have-tos. By have-tos I mean the way a mother or father change their baby's diapers because they "have to," not because at a particular moment they want to. You don't say, "Oh boy, am I ever dying to change the diapers." You may enjoy it but your motive is not because you want to or don't want to. Someone must change your baby's diapers, so you change your baby's diapers, that's all.

And we actually need such things. We need such have-tos. People who don't have them have to create them. If you meet people who are, say, very rich, and can have anything they want, you will find they often create a neurotic array of have-tos. And people are always doing this. Alcoholics are creating some have-tos, always putting themselves in some strictness by drinking. These are rules you make for yourself. Crazy people are possessed by "have-tos." If we do not have "have-tos" or cannot accept "have-tos," then we unconsciously make them.

So in Zen we practice with these have-tos which are not in the realm of likes or dislikes. We come to service and chant, not because we like to or dislike to, but because it is a part of this practice, a wisdom of this practice. And if you're practicing with ideas like, "When will I get to like chanting?" you're missing the point. If you get to like chanting too much, we should add something else that is rather a nuisance to do. You should be able to do things without much problem.

By these kinds of strictures or have-tos, we can actually study our desires, actually find, as Suzuki-roshi said, our organic power, our tendencies. Without this kind of have-to in your life, there's no way to plumb your desire and your strength. There's no way to study one thing. We want to

Robert Boni

At Tassajara Zen Mountain Center

study just one thing, just X, until we understand every alphabet. We don't study X for X, we may study Y to understand X. Nangaku-zenji said, "If you want to practice zazen, don't sit zazen. If you want to achieve Buddhahood, there's no special type of person who achieves Buddhahood." This is what I'm talking about.

You know Nangaku was Baso's teacher, and Suzuki-roshi's favorite story was about Baso and the tile. Baso was doing zazen, studying zazen to attain

Buddhahood, so Nangaku picked up a tile and began rubbing it. Baso said, "What are you doing?" Nangaku said, "I'm turning this into a jewel." So Baso said, "How can you make a tile a jewel?" And of course Nangaku said, "How can you make yourself into a Buddha?" And then he said, "If you want to make a cart go, do you hit the horse or the cart?" This is again the same.

Suzuki-roshi said we may starve to death at Tassajara or at Page Street. But he didn't think we would, if we just practiced zazen, if we just in our practice took care of everything completely. We need to trust this kind of activity – not studying X in order to understand X, and Y to understand Y, and so on. But by studying X we will understand everything. Just to have that confidence and practice Buddhism, practice zazen, just for the sake of zazen, is our way.

Many sayings reflect this kind of feeling. When it's night-time, dawn is here. Before winter is over, spring is here. Even if you don't understand it, or accept it completely, if you are practicing you should have this kind of confidence, you should try to accept it. Can you accept it? Can you just do zazen completely? Can you just do this sesshin completely, as if nothing else existed, as if you would die on Friday night?

There are two recognitions that you will come to when you are able to face things as they are, not wishing they were some other way. One, we can say, is death. By death I don't mean just that someone's going to die, though on death we may realize this deeper finality, as Dogen did watching his mother die, watching the twin trail of smoke rising from the incense stick. The finality I'm talking about you may recognize when someone goes crazy, when you can't reach someone, or when you cannot reach yourself; when there is almost nothing you can do about yourself, and less about a friend. And even less about the suffering in this world. You can't do anything about each moment even. Each thing just happens, and hopefully you know your oneness with it.

And by zazen we're trying to develop our strength and ability to be one with our activity. You notice the finality of each thing, that it happens only once and is not repeatable, or graspable, or regainable, or re-doable. If you're not there, not present, it's too late. This recognition and not taking it too seriously, gives our life some seriousness. You know, by the time you wish or think, it's already too late. You take it too seriously when you think the outside world is there, saving up to get you.

And the other recognition is that we are corruptible. All of us are corruptible. All of us, when pushed, almost all of us have a price. You know, we'll sell our mother if we have to. I'm sorry to say so, but it's true. Governments use this to force people to do things. And many people use it to make the most of their own and others' corruptibility for profit or power. Much of our way of thinking is based on the idea that everything is repeatable and not corruptible.

Recognizing this suffering or this corruptibility, the Bodhisattva recognizes in himself, herself, this event, this eventuality, and so creates the conditions for good, let us say good. So the most basic suggestion in Buddhism for everyone is to practice good, avoid evil. Now good and evil in Buddhism are pretty close to the roots of the words good and evil. Good and God mean to unite something, to put something together, to recognize the larger body. And evil means to extend over, like the eaves of a house, to be off the mark, or to set something over, to set something up.

So the Bodhisattva doesn't set up anything. You don't try to create something, to make something that lasts. You don't try to possess anything. But you do try to create – this is a rather subtle point – the conditions for people to exist beneficially. So first of all for yourself you try to create the conditions by which you can exist beneficially. And our way to do this is to practice zazen. ■

Primitive practice

Dear Folks,

An item of potential interest: **Experimental Archeology Papers** (or the **APE**) is an annual (or so) publication put out by the Department of Sociology and Anthropology at Virginia Commonwealth University in Richmond, Virginia. The Department sponsors several unique anthropology courses called Experimental Archeology and Living Archeology during which students analyze data collected as a result of their experimental studies. The studies include making and using stone tools, primitive shelter construction, ceramic pot building – Indian style –, primitive basketry, edible wild plant processing, etc. The summer field school course, open to anyone but highly competitive, is called Living Archeology. It entails a month-long subsistence project living in the woods in primitive shelters using only stone tools and pots they have made and conducting considerable experiments related to primitive technology – all this while living off the land. They use no metal, plastic, or other 20th century contrivances. The project is geared to collecting objective data to aid in interpretation of the archeological record and therefore to shed more accurate light on the understanding of where we have come from, where we are going. As the project is conducted under the actual living conditions of the early Indians, it is not just another craftsy survival course by any means.

The **APE** is comprised of papers written as a result of these projects and deals with numerous facets of primitive living. Besides dealing with data in a structured and scientific manner, the **APE** is full of info on employing the above techniques as well as problems and rewards of living the primitive. Despite its scientific orientation, by-products of the program and the **APE**, both of which are rapidly gaining national recognition, include independence from 20th century technology, living at zero cost, self-awareness, social problems of small band living, use of natural materials and tools, ecosystem equilibrium, nomadics technologies, and especially instruction on the making and using of flint tools. The numerous charts and illustrations alone in past issues have made these publications collectors items for anyone seriously interested in developing primitive outdoor skills. They also have a large data bank of related slides and films which they rent and/or sell at cost.

For information, write:

The **APE**
Dept. of Sociobiology/Anthropology
Virginia Commonwealth University
Richmond, VA 23284

The cost is $3.00 per issue of up to 200 pages each.

Best Regards,
Errett Callahan
Richmond, Virginia

Business

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"An example of concurrent evolution (co-evolution) leading to recurrent evolution (re-evolution; more simply, revolution)."

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And 10 Anonymice

Grassroots Distribution

In the Spring 1975 CoEvolution Quarterly we invited any of you who know of newsstands or bookstores in your area that might be interested in carrying the CQ to become one of our distributors. That invitation still stands.

For those of you who'd like to order in case lots (a case is 50 copies), we'll ship you the current edition of the CQ for $1.25 per copy. The suggested price to retailers if $1.50 per copy. We'll give you full credit for copies returned to us in saleable condition. (Please send full payment with your order.)

There is another option for small bookstores or shops that might want to carry the CQ but can't handle orders of a case lot or more. For them, our terms are these: a minimum order of 10 copies for $1.50 per copy, with no returns and with pre-payment in full. If you think your corner grocery, for example, might be interested, show them a CQ. We could sure use the exposure.

Our vision is still the same: to participate in a national distribution network that could reach shops not being served by the current distribution networks. And it seems to us that you, the people who know us best, could be our best distributors. If you're interested, contact me at Box 428, Sausalito, CA 94965. Phone (415) 332-1716.

—Jeanne Campbell

Free-Lance Guidelines

The following guidelines for publication editors and publishers are suggested by the Free-lance task force of the Media Alliance, 13 Columbus Ave., San Francisco, CA 94111.

We ask that:

1. All publications publish their minimum word rate.
2. A kill fee of at least 30% of full price be established for all assigned articles.
3. Payment for free-lance material be on acceptance of a publishable manuscript. Each publication should state in writing their method of accepting manuscripts and the approximate time it takes them to make editorial decisions.
4. The writer should approve the final copy of his/her article before it appears. We suggest, because this is one of the most dismal areas of disagreement between editor and writer, that writers initial their copy just before it is typeset.
5. Each publication should publish a minimum style sheet.
6. Each publication pay "normal expenses." We mean mileage, phones, parking and meals out of town; "extra-normal" expenses should be negotiated before work begins on an article.
7. Publications provide identification to writers on request as it is needed.
8. Editors in power assign stories. We mean that if an assistant editor assigns a story, the writer can be assured that the managing editor or editor-in-chief is aware the story is assigned and has given her/his approval.
9. Each writer is assigned an editor for her/his story and that editor is accessable to the writer.
10. Staff members of publications are identified in writing by title, function and area of responsibility.
11. Writers should be informed of conflicting story assignments before they begin work on any article. We mean two things (a) some magazines assign the same story to two writers hoping to pick the better of the two for publication and (b) sometimes magazines assign the same story to two

Expenses

Salaries and Fees		
Office	$9,636.00	
Production	3,697.50	
Editorial & Contributors	4,437.00	
Rent & Utilities	1,465.27	
Office Supplies	1,459.71	
Production Supplies	722.48	
Postage (office)	872.45	
Phone	1,096.87	
Auto & Travel	95.96	
Research	674.46	
Total Production Expenses		$24,157.70
Promotion		5,750.00
Printing (33,000 copies)		15,481.00
TOTAL EXPENSES		$45,388.70
(Cost per copy, $1.375)		

Income

Subscriber copies		
Subscription price	$ 1.50 (Former rate was $6/yr)	
Business reply mail	(.045)	
Computer records	(.066)	
Labelling & sorting	(.038)	
Postage	(.063)	
Net return per copy	$ 1.288	
17,250 copies		$22,218.00
Newsstand copies		
Cover price	$ 2.50	
Wholesale discount	(1.25)	
Shipping	(.063)	
Returns (20%)	(.25)	
Net return per copy	$ .937	
12,500 copies (shipped)		$11,712.50
TOTAL INCOME		$33,930.50
NET LOSS		($11,458.20)

writers but with different slants. All we ask is that writers are aware of this situation before they invest their time.
12. Payment for an article based on word count should be based on the assigned word count rather than the published word count.
13. Letters concerning articles by free-lancers should be available to the writers.
14. Each publication should establish regular, published editorial meetings with regular contributors to discuss themes, issues, changes in publication policy and the direction of the publication.
15. Each publication shall inform the writer of copyright agreements before work begins. Since copyright law is an elaborate and often confusing field, we plan to expand this guideline after some investigation.
16. All above agreements between writer and editor should be in the form of a contract and should be signed by writer, editor and business manager before work begins.

CQ Guidelines

As an often embittered free-lancer I agree. Every publication should say more about its relation to contributors. In response to the Media Alliance list:

1. **CQ** *pays $100 - 200 on most articles and interviews, depending on quality and length (never word-count). Extra if illustrations are provided. $50 for reprinted articles. Photographs get $14-40 depending on quality and use. Cartoons ditto. Cover artist gets $200. All letter writers, suggestors and reviewers get $10 per item published.* **CQ** *editors and staff are paid $6/hour.*
2. "Kill fee" is when an article is requested but not used. Mostly we don't pay one, but mostly we don't fail to use requested articles. When we do, 30% is right.
3. At the request of the writer we pay on acceptance (otherwise, on publication). Approximate time for editorial decision is five minutes.
4. Amen. Especially interviews should be seen and corrected by interviewees. We like it best when the writer/artist can see and work with the final paste-up even.
5. Style? Conversational, grammatical English is preferred. Writer self-obsession discouraged.
6. - 11. Right.
12. Inapplicable. Mostly I don't touch people's writing, though I'm starting to more.
13. We forward the interesting comments.
14. Good idea. We do one before each production.
15. One-time use is all we do. We protect copyright for the contributor, but their piece is theirs to re-use as they like. When we get requests to reprint something we've run, we insist on permission of the originator, some payment to them, and credit to **CQ** *(no payment to us).*
16. So far all **CQ** *contracts (except with Random House, Penguin, and POINT) have been verbal. No complaints yet.*

In addition:

CQ sends early and multiple copies of their issue to each article writer, along with a year's free subscription.

Each item writer (as well as the supplier) gets a tearsheet.

This magazine is for readers, by contributors. We owe everything to both.

—SB

CQ Financial Report

The production and promotion expenses listed above are our actual expenses from 1 Feb. '76 to 30 Apr. '76. The printing cost is the estimate of what we will spend on this issue. The 17,250 subscriber figure on the income side is a projection of how many subscribers we will have by September. (That figure was 10,500 three months ago – a 38% improvement.)

Part of that heartening jump in our subscribers is due to extra promotion effort, which carried with it additional expenses. Even so, our net loss for this issue will be about $11,500, compared with $16,000 for the last one. Our financial picture keeps looking better, but we haven't stopped trying to figure when we will break even (our "magic number" is about 28,000 subscribers) and how we'll get by until that happens.

Looking over our records, we've discovered two statistics we'd like to share. About 2,500 of 7,000 new subscriptions since the first of the year were gift subs from our readers to their friends. That's $12,880. And during the same period, we've received $4,644 from sustaining, retaining, and maniacal subscribers.

THANK YOU.

—Andrew Fluegelman

'Or Whole Earth'

Under the access of an item in The CQ *means you can mail order it from:*

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558 Santa Cruz Ave.
Menlo Park, CA 94025

Anything else – letters, material for the magazine, subscriptions, complaints, should be sent to us here at:

The CoEvolution Quarterly
Box 428
Sausalito, CA 94965

Gossip

How long is it going to take us to live down the Space Colony issue? Besides the Wendell Berry trauma (p. 8), here's part of a letter from Andrea Sharp's mom, "I noticed what your answer was, Andrea, on the last page of the CQ *about Space Colonies. I was very glad you said 'no' to them . . . [Andrea turns page, expecting moral lecture] . . . California's far enough."*

This issue seems to be about trees and women. We don't set out to do theme issues (a form I dislike). They just cluster up on us. Peter Warshall is gathering material on watersheds for the Winter issue — he considers them sentient beings. If you have anything, send it along.

There's two new faces amid the Waldo Point dust here (dry summer). George Edward Keenan ("GEK") is 33, a new father (daughter Bevin), a former Madison Avenue adman. He's here to handle the new subscription (and complaint) traffic. Also helping on paste-up is Donald Ryan, 34, a cartographer and geographer in Sausalito.

Speaking of complaints, new subscribers should know that it takes about four weeks for your first issue to come. Your cancelled check may arrive first.

To help arrive at the break-even figure of 28,000 subscribers, Jeanne Campbell has been doing some direct mail promotion. The best approach, we've found, is to exchange lists with people we feel close to and who we think may be of interest to our readers. Then I write a note of praise that goes out with their mailing, and they write a note of praise about us that goes with our mailing to their list. The whole thing feels less of a trespass that way, and response is also much stronger.

We've traded lists with Rain *(1,200 names), Friends of the Earth (4,000), Lindisfarne (2,500),* The Ecologist *(600), New Dimensions Foundation (Bay Area, 800), and* East West Journal *(2,300). We've bought partial lists (no trade) from Esalen Institute (20,000),* Rolling Stone *(5,000),* Mother Earth News *(10,000),* New Times *(3,000) and* Psychic Times *(2,000). We've sold our list to nobody, and won't.*

More business here. We've got an instant photostat-maker, a Stat King, for sale for $800. It cost us $4,000 new in 1969.

And a strange invitation. I've been helping Gregory Bateson set up a meeting to formally dissolve the Mind-Body Dualism, which he finds at the root of most misbehavior in the western world. The meeting will take place near San Francisco, July 27 - 30, 1976. No audience. The participants are Gregory, myself, Richard Baker (this issue, p. 138), ecologist Ramón Margalef, cyberneticians Heinz von Foerster, Francisco Varela (p. 26), and Gordon Pask, computer language designers Alan Kay and Terry Winograd, geneticist Robert Edgar, Governor Brown's assistant Jacques Barzaghi, Gregory's daughter linguist Mary Catherine Bateson, and inventor Steve Baer (p. 76). They're all exchanging position papers now.

Here's the gimmick. It'll cost us about $7,000 to cover travel, logistics, and working up the results for publication. No foundation or angel has sprung for the bill, so I'm putting up the money personally. People are dying to get into the meeting — serve coffee, hold chairs, anything — we're all getting phone calls. Okay. Anyone who makes a $1,000 contribution to the meeting can audit the entire event.

—SB

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Brand

CQ *at GPO. Since the Government Printing Office does not send review copies, and we're too broke to buy everything that looks promising, we went to them. A fruitful trip with results in this and the next* **CQ** *— good GPO books are good indeed. Some are just fascinating, like the volume of Congressional Medal of Honor citations for Vietnam — astonishing heroism otherwise unsung. Left to right: J.D. Smith, Rosie Menninger, Andrea Sharp, J. Baldwin, Jeanne Campbell, Diana Fairbanks.*

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Back Issues

Issues No. 1 (Spring 1974) and No. 8 (Winter 1975) are Out of Print.

No. 2

No. 2, Summer, 1974

Setting Food By *Doris Herrick*
Ehrlich's Guide to the Apocalypse: Food *Anne H. Ehrlich and Paul R. Ehrlich*
Tongue Fu *Paul Krassner*
Sanctity and Adaptation *Roy A. Rappaport*
Natural History Comes to Whole Earth *Peter Warshall*
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Gorf *Michael McClure*
The POINT/Penguin Books Publisher-Distributor Contract for the Whole Earth Epilog *Lawrence Klein*

No. 3

No. 3, Fall, 1974

Edited by the Black Panther Party *Huey P. Newton, Elaine Brown, Ericka Higgins, David DuBois*

No. 4

No. 4, Winter, 1974

"The whole system is out of whack" *Dale Jorgenson*
Energetics' Shortcomings *Hazel Henderson*
Enough Energy for Life & The Next Transformation of Man *Lewis Mumford*
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Man-Made Planets, Seriously *Graham Chedd*
A Canadian Home, 1973 *Robert Frank*
Lunaception *Louise Lacey*
Preventive Dentistry Primitive Style: A Case History *Walter W. Fingar and Stephen A. Ross*
Rich Is Beautiful! *Michael Slattery*
The Season Was Late. The Hunt Was Hard. *J.D. Smith*
To South America *Lynn Meisch*
The Great Gaming-House *Kelly Yeaton*
The Entire History of Man *my*
Dharma Taking Root in the (south) West *Zim*

No. 5

No. 5, Spring, 1975

2025, If . . . *R. Buckminster Fuller*
Plains of Science, Summits of Passion *Kenneth E. Boulding*
Energy Choices *Medard Gabel*
Getting Specific for a Porpoise *Eugenia McNaughton*
Sociobiology *Gina Bari Kolata*
The Culture of Agriculture *Wendell Berry*
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Small Tractors *Richard Nilsen*
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"Furthur" to the Smithsonian *Stewart Brand*
South of the Slot *Dan O'Neill*
Sesshin Lecture *Zentatsu Baker-Roshi*
The Posthumous Journey of the Soul—Myth & Science *Stanislav Grof, M.D. and Joan Halifax-Grof, Ph.D.*
New Swimming *Rosemary Menninger*

No. 6

No. 6, Summer, 1975

What Do We Use for Lifeboats When the Ship Goes Down? *my*
Living on a Lifeboat *Garrett Hardin*
Holiday for Cynics *Dan O'Neill*
Three From Space *Carl Sagan*
The Atmosphere as Circulatory System of the Biosphere—The Gaia Hypothesis *Lynn Margulis and James E. Lovelock*
Who's Earth *Russell Schweickart*
Introducing Margalef *Stewart Brand, Peter Warshall, Michael McClure*
Perspectives in Ecological Theory *Ramon Margalef*
Dude Farms *Sally Nicholson*
Seed Clouds, Reap Havoc *Patrick Porgens and James R. Bukey*
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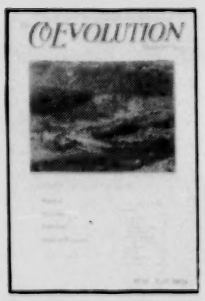

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Sociobiology *Peter Warshall*
More Highly-Evolved Toolbox *J. Baldwin*
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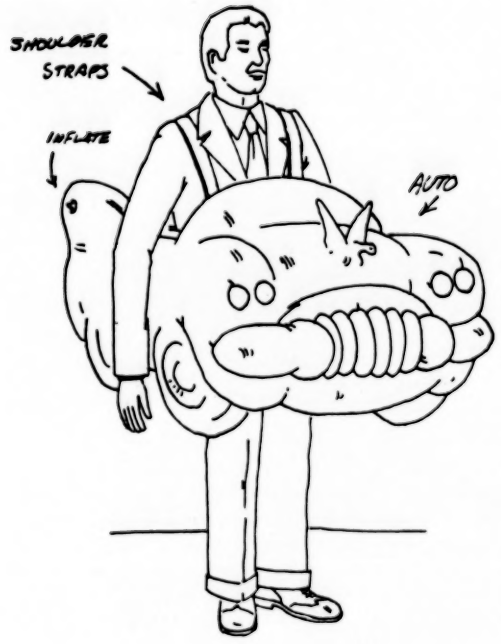

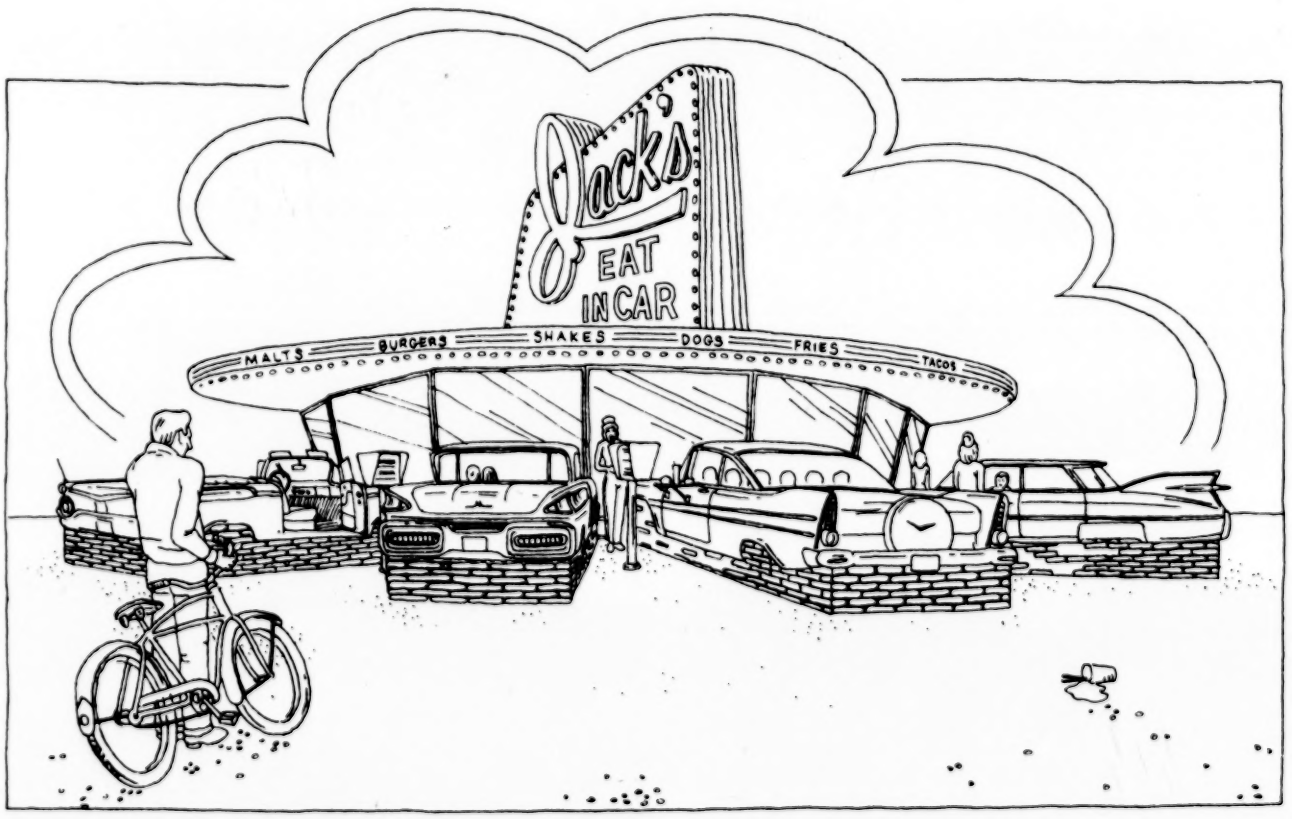

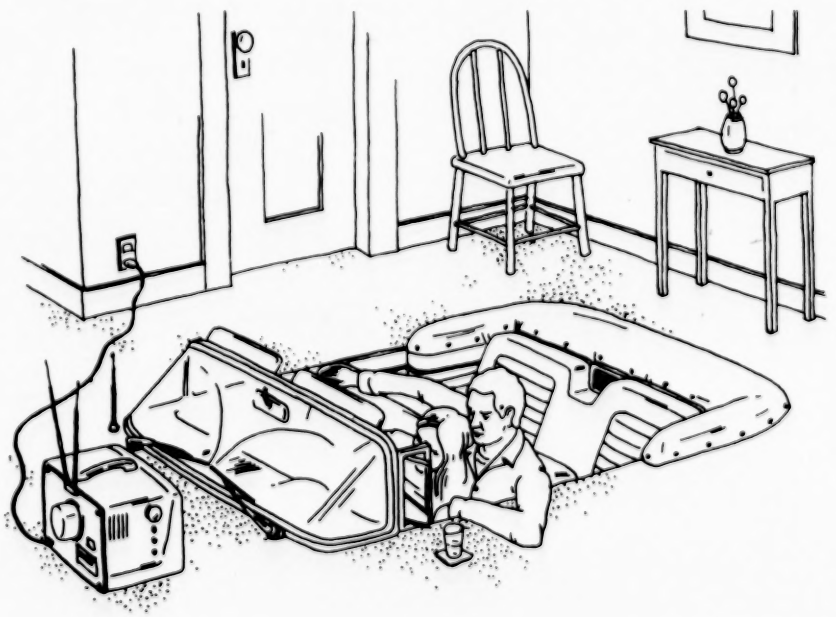

drawings by Philip Garner

In my famous bright red car everyone will know me and be glad to see me and even when I'm not around whenever they see something red they'll think of me because all flashes are the same flash and red is the flash of blood and the flash of me coming down the street because if I don't come bright and singular I'll be unnoticed and unremembered and the same as dead – better red than dead – that's the choice because red is blood and blood is life and the fear of death and because of that red is the color of attention the pure light of attention on me of me by me for me who am the driver of this unusual red vehicle coming down the street to spark your day and make you smile at the sharpest character in your story and be glad to be even a minor character in my story which is always driving or parked somewhere just as red when you can't see it as when you can.

—*SB*

BORING